

amateur radio action



Oceania's Amateur Magazine

Volume 14 Number 12

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Gosford Field Day



Drake R8 review

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On Sale: 17 March, 1992

Special Features

- 6 LOOK THE PART! WEAR AN ARA T-SHIRT.** We wanted to stand out at Gosford, so we had top-quality T-shirts and sweatshirts made. We were knocked over by the interest shown — and now it's *your* turn. Tell the world you're an amateur operator by wearing *our* shirts!
- 12 THE GOSFORD FIELD DAY:** Three ARA regulars — the editor, Chris Edmondson, along with Neil Duncan and Steve Gregory — dashed up to Gosford in a mad one-day scramble. And a scramble was exactly what we *didn't* see! Instead, we saw mountains of amateur gear moving from one home to another. But *what* an experience! Read on as we look behind the scenes...
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- 42 WIN AN ICOM TRANSCEIVER!** ARA's latest competition is a beaut — and *you* could be the winner...
- 50 EQUIPMENT BRIEF — YAESU FT-912R:** There's lots of life on 23cm if you know where to look. Here's Yaesu's latest offering for this interesting band.

Cover: Seductive new equipment was piled as high as the smiles were wide at the 1992 Gosford Field Day. And didn't it get 'em in, too! No matter how fast the happy purchasers were trudging each bargain to the car, the traders were wheeling the cash out in barrows even faster. We always thought that a Field Day was where they went to have a bit of fun, but it seemed the traders were having the most fun of all! Gosford is Australia's equipment bargain mecca. They talk in hushed, revered tones about this place — and now we know why. Our slightly tongue-in-cheek report starts page 12...

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TO ALL NEWCOMERS

Welcome to **Amateur Radio Action**, the only journal of *amateur radio* in Australia and the surrounding region available on the news stands. If you are not a radio amateur, this page may assist you to better understand the hobby sometimes also known as 'ham radio'. It is not possible to tell you all there is to know about amateur radio on one page, but we can at least try to explain what our magazine is all about and where you can discover more about this fascinating hobby.

There are approximately *four million* licensed radio amateurs around the world — some 500,000 of them in the United States and more than 1,500,000 in Japan alone. In Australia, over 18,000 people are licensed as amateurs by the controlling government department, the **Department of Transport and Communications** (DoTC). The **Wireless Institute of Australia**, representing around a third of Australia's amateur population as members, deals with the department on behalf of Australian amateurs.

People become amateur operators for a variety of reasons, but probably the most important one is that they want to *experiment* in all facets of wireless communication. Unlike CB radio, therefore, the issue of an amateur radio licence requires an examination of the applicant's knowledge of the basic principles of radio and electronics, international radio regulations and, in most cases, the ability to send and receive Morse Code.

While this may seem difficult, people from all backgrounds and age groups have passed these examinations, often with no more assistance than the books available from their local library. Australia has hundreds of amateur radio clubs spread throughout the country, and many of these provide classes for intending amateurs. Some classes are free of charge; others may carry a nominal cost. Many clubs also conduct the examinations you need to pass to get on the air. A list of radio clubs is published periodically in **Amateur Radio Action**. All clubs welcome visitors and new members.

Amateur Radio Action, too, helps people become amateurs. Our all-new AOCP theory course continues this month, and we too will soon be conducting examinations right here in the middle of Melbourne for those who wish to take advantage of that service. Our first examinations will be conducted next month; see the advertisement in this issue.

In your reading of **Amateur Radio Action** you may encounter some strange and unfamiliar terms. Radio amateurs use a form of 'shorthand' developed from the abbreviations developed decades ago for use with Morse Code. Here are some of them: A **QSO** is a contact with another amateur station. A **QSL** is a card confirming such a contact. The **QTH** is the location or address of an amateur station (often indicating where a QSL card may be sent). **QRP** means low power operation (usually less than five watts output). Oh, and a **QSP** is a message, if you were wondering about the item opposite. **DX** refers to long distance, so a 'DX station' is usually an overseas radio amateur. His 'QSL route' is the address to which a QSL card can be sent. **MF** means 'Medium Frequency' and, to the radio amateur, indicates the long-wave 160 metre band. **HF** means 'High Frequency' and the shortwave bands from 80 to 10 metres. Our access to these bands means that most amateurs are able to contact virtually any point on the earth's surface, day or night. **VHF** means 'Very High Frequency'. Amateurs in Oceania have access to two VHF bands, which are called the six and two metre bands. **UHF** is 'Ultra High Frequency', and includes three amateur bands. Radio amateurs in Australia are permitted to use one MF band, eight HF bands, two VHF bands, three UHF bands and seven **SHF** — *Super High Frequency* — bands.

Amateurs communicate together in many different ways. **CW**, the oldest of our modes, means 'Continuous Wave' and most signals using this mode use the Morse Code. **Phone** means any mode using normal voice operation. Phone modes include AM, or 'Amplitude Modulation' (as used by Medium Wave commercial radio stations); **FM** is 'Frequency Modulation' (as used by the 88 to 108 MHz FM radio stations); and **SSB**, which is 'Single Sideband', a specialised voice mode which uses only half the band space of AM or FM. **RTTY** is 'Radio Teletype', a means of sending and receiving 'hard copies' of messages by radio using a teleprinter machine. **AMTOR** is an advanced form of error-free RTTY. **Packet Radio** is a sophisticated means of linking computers via radio. **ATV** is *Amateur Television*, where amateurs experimenting with 'fast scan' color TV transmissions can often be monitored on UHF TV channel 34. **SSTV** is 'Slow Scan Television', a means of sending less sophisticated television pictures around the world on the HF bands. Amateurs also send messages via facsimile — just like the fax in your office, only it's via the radio — and have launched almost 20 orbiting satellites which relay short-range VHF and UHF signals around the world.

Amateur Radio Action is a mix of news, feature articles and regular columns for radio amateurs and short-wave listeners (SWLs). **QSP** is the Editor's page, usually devoted to matters of topical interest. **YL FORUM** is a column which promotes discussion of topical and controversial matters from a female point of view. **NEWS DESK** contains news items, announcements and new product information. **DX & BAND REPORT** contains information of interest to HF operators. The **IPS PREDICTIONS** report provides graphical information which can be used to work out which DX locations might be heard on a particular band at different times of the day from the east and west coasts of Australia. **SHORTWAVE** is a column for short-wave listeners, containing news about shortwave broadcasting stations. And, of course, there's much, much more...

Amateur Radio Action feature articles cover a wide range of radio-related topics including reviews of new products, equipment construction projects, modifications to equipment, amateur operation in other countries, stories from the early days of radio experimentation (which started with Marconi, the pioneer of wireless operation late last century), antenna construction projects, and discussion of matters affecting amateur radio operation.

We hope you will enjoy reading **Amateur Radio Action** and be stimulated to find out more about this unique and exciting hobby.

amateur radio action

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Newsletter editors and publishers please take note!

QSP

The world's HF operators can breathe a sigh of relief — the 40 metre amateur band is to stay put, for the time being at least. The popular DX band had been under threat of moving *below* 7 MHz to give international broadcast stations extra spectrum, with the

matter expected to have been resolved at the World Administrative Radio Conference (WARC-92), which concluded earlier this month in Spain.

However, the delegates were unable to reach agreement on the proposed changes, as each side refused to vary its demands. The deadlock resulted in a 'no decision' being recorded, but the matter will be reviewed at a future meeting.

Moving the 40 metre allocation would present many operators with significant problems. To start with, most amateur equipment is unable to transmit below 7 MHz — and much of it cannot be modified without significant CPU surgery. The problem is compounded by antenna considerations. Moving the band would destroy the harmonic relationship between bands, making some antennas considerably more complex.

We'll present a summary of WARC-92 findings next month.

Competition time...

Oh come on, you don't *really* want to just fill in a form and take your chances, do you? This month, **Amateur Radio Action** introduces a new competition in which you could win a terrific **Icom IC-2SRA** transceiver / scanner or one of several other great prizes — and you have to *work* to earn your prize!

What we're after is quality home-brew project ideas, limited only by their application to the amateur shack, your imagination — and an all-up budget not to exceed \$200 in parts or raw materials. You don't have to submit the project itself to have it considered by our technical panel, although publishable photographs would certainly add to the appeal.

Your covering letter should give exact design and construction details, along with a description of what the project is, how it works — and what it's supposed to do, just in case we can't figure it out!

Icom Australia has furnished the major prize, while Melbourne's Stewart Electronics has provided the runner-up award. As well, several complimentary **Amateur Radio Action** subscriptions are up for grabs. So come on, home-brewers, get those thinking caps on and get those entries in for a chance to WIN with **Amateur Radio Action**!

Gosford...

Our report on the 1992 Gosford Field Day heads the Contents page for this issue. What can we say? Wow! That's one big day, and our hats go off to the organising committee for a fabulous effort. The venue was... er... quaint, to say the least, but we understand that's being addressed for 1993.

It seemed that just about every eventuality had been covered by the organisers, and I suspect they're probably already into the organising pohase for next year's show. (Yes, it really is that big.)

But the editor headed for home with a sore head — literally — after being walloped on the back of the scone by a piece of equipment being 'auctioned' by one of the traders. At the end of the day, rather than take the unsold stuff home, they try to sell it off, piece by piece, to the highest bidders — and if that fails they just chuck it into the crowd. Not expecting this last development, I was foolish enough to turn my back on the entertainment to go and talk to some *serious* traders when WHACK!

That really spoiled my day, and I won't be going back to Gosford until that sort of stupidity is brought under control. In fact, some of the other traders I spoke to were thinking of boycotting future shows unless something is done about the trader's antics. (Last year, I'm told, one poor individual got speared by a flying two metre steel quarter wave whip. Glad I wasn't there!)

Other than that, though, Gosford was a true experience. Well done, CCARC! We'll see you next time. Cheers from Chris Edmondson, VK3YID.



Readers' contributions invited

Write to GPO Box 628E, Melbourne 3001

SAREX on its way again...

The next US space shuttle destined to carry amateur radio into orbit will be the Atlantis flight STS-45, scheduled for lift-off next Monday, March 23, at 1301z. Four crew members are licensed, and plan to operate on two metres FM and packet during the flight with the now-familiar **SAREX** (Shuttle Amateur Radio EXperiment) program. Pilot **Brian Duffy**, N5WQW, mission specialist **Dave Leestma**, N5WQC, payload specialist **Dirk Frimout**, ON1AFD and mission specialist **Kathy Sullivan** — whose brand new 'technician' callsign had yet to be announced at press time — all plan to operate during the flight, with first operations scheduled for orbit 9 and later.

It seems likely that the call sign to be used over Australia will be **ON1AFD**, although you may possibly hear **N5WQC** as well.

News on the flight's progress, a replay of all traffic between Houston flight control and Atlantis, and other interesting information may be heard on the Goddard Amateur Radio Club's 24-hour transmissions during the flight. Listen for **WA3NAN** on 3860, 7185, 14,295, 21,395 and 28,650 kHz. Further information will also go to air on the regular **W1AW** bulletins. For those with the facilities to track satellites direct, you can get the Keplerian elements from most packet BBSs or, for the most up-to-date information available, you can dial into the USA using a telephone modem. Try 0015 1 713 483 2500, using 1200 baud, 8 bits, no parity and one stop bit.

To contact SAREX, listen on 145.55 MHz (the same frequency as the Soviet space station **MIR**), but you'll need to operate with a negative duplex offset. The primary uplink frequency is 144.950 MHz, with secondary uplink frequencies of 144.910 and 144.970 MHz.

Good luck — and please let **News Desk** know how you fare!

Look like an amateur operator...

At last, you can 'get the amateur look' with an **Amateur Radio Action** short-sleeve T-shirt or winter-weight long-sleeve sweat-shirt. We've commissioned a limited run of top-quality Australian-made shirts which uniquely identify you as an amateur radio operator. (And their debut at the Gosford Field Day drew some very favorable comments!) Packing and postage is included in the purchase price.

No longer will you walk right past amateur friends-by-radio in the street without knowing who you're passing! The shirts are *great* value, too. Fill in this *express order form*, and let the world know who you are... They cost just \$15 for each T-shirt or \$25 for each sweatshirt — or get one of each for an even better \$38!

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I enclose my cheque / money order for \$ _____ or debit my Mastercard / Visa /
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Expiry date ____/____/____

Signature _____

Rush your order to **ARA Shirt Offer**, GPO Box 628E, Melbourne 3001

Telecom and OTC merge...

Telecom and OTC merged on February 1 to form the **Australian and Overseas Telecommunications Corporation (AOTC)**. The federal government determined that the merger should not proceed until Telecom and OTC had implemented the necessary arrangements and equipment which would allow fair and equitable access to their networks for the new second carrier, **Optus**, which purchased **AUSSAT** as a part of its formation.

AUSTEL has now certified that these arrangements are now either in place or sufficiently advanced to enable Optus to compete on an equal basis.

The merger is the culmination of a sequence of decisions by the government which has placed Optus on an equal footing from Day One of operation. These decisions have included the establishment of a commercial capital structure through conversion of \$2 billion in commonwealth loans to equity and the appointment of a board of directors with strong commercial experience and expertise.

AOTC has been established on a commercial basis and is in a strong financial position so that it is fully competitive in the new telecommunications market.

The federal government now expects AOTC to focus on becoming a world-class telecommunications company capable of delivering services to consumers at the best international standard.

That news from the DoTC's newsletter, 'Transcommunications'.

Port Macquarie takes on Gosford...

The **Oxley Region Amateur Radio Club** will take on its southern neighbor Gosford in its forthcoming 1992 Field Day, scheduled for the Queen's Birthday long weekend on June 6 and 7.

The event, advertised as a 'similar event to the Gosford Field Day but for the north coast', will be held in picturesque Port Macquarie on the NSW mid-north coast.

News Desk's advice to the organisers is simple: borrow some of the fantastic Gosford atmosphere, ban all thunderstorms and exhibitors who get so excited that they throw their cheaper products all over the place, make sure your Tacking Point Surf Life Saving Club has *loads* of space, and put on a few outdoor activities like fox hunts and the like — then stand back for the crowd!

Megalomania strikes!

American VHF/UHF power amplifier manufacturers have supplied ample evidence that the desire for high power in some amateur circles continues unabated. The president of US amplifier manufacturer, **Mirage**, William Scott, announced earlier this month a new **300 Watt** output amplifier for two metres which requires only about 10 watts drive.

The release read, in part "...We now have a 300 watt two metre amplifier designated the **B1030-G**. Can you imagine the number of 10 watt transceiver owners who'd love to be able to go on the air with 300 watts minimum output? We know there are not too many hand-held 5 watt units out there (*Hey, what about all the later-model Icom, Kenwood and Yaesu units Scotty? Ed.*) but even these will generate typically 270 to 290 watts output depending on frequency!"

Can you imagine that! Well, the editor is about to put a new transceiver in his car, so maybe **News Desk** should get him one. (*For SSB, of course! Ed.*)

We think he'd better get a bigger battery and alternator, though. The B3030-G requires 48 amps at 13.8V DC and even boasts a GaAsFET preamp with selectable 15 or 25dB gain.

Come to think of it, Editor Chris, you had better replace the RG58 coax on the whip... and *don't* try it with a through-glass antenna. I don't think the insurance company would be too pleased when you told them the windscreen was destroyed by an RF heating plant like this!

The 8-3030-G is expected to sell for about \$1100 in VK, and you can get more details from **Stewart Electronics**.

NEWS
DESK

You thought *that* was big?!!

In the same release from Mirage comes details of its new **600 Watt** two metre amplifiers!! Imagine this: 10 watts in for *600 watts minimum* out, or a miserable five watts in from the hand-held for 550 watts out! But you had better be prepared for this: in addition to finding the hefty price tag of a little over \$1800 for the amplifier itself, you will *also* need to find a source of **28V DC** at no less than **52 amps** to power the thing. Anyone got a few spare diesel starting batteries floating around?

While we're on the subject of amplifiers, it might be interesting to run some of the news we have been hearing lately by you:

Mirage also has a 100W in 800W out DC HF amplifier, ideal for the keen mobileer, and this has a \$2200 price tag in VK. Many manufacturers are responding to market pressure by building ever-larger units, and the availability of new transistors to produce 150 to 200 watt offerings on 70 cm should mean that later in 1992 we should see the first high-power dual band power amplifier hit the market.

It seems that, despite the trend to higher- and higher-power radios (for instance, Icom, Kenwood and Yaesu offer only their 50 watt units in this country now) there still seems to be a demand for more and more power. Remember the good old days when a 10 watt IC-22A was considered King of the Heap?

An attack of the oldies...

Last month we reported the availability of a few IC-2GA transceivers from selected Icom dealers. Well, you *must* have read it because we are reliably informed that they sold an absolute bucket-load of these things in just a few days after the magazine hit the stands! A few remain, however, and you may also be lucky enough to find some IC-2GATs (same as IC-2GA with a DTMF keypad) getting around for about \$425. Isn't it amazing, one minute everybody wants miniature radios, next thing the good old 'clunkies' are selling like wildfire...

As a foot-note we might point out that the IC-2GAT was mistakenly shown in place of the IC-2GA in last month's **News Desk**. (*It was no mistake, Mr Smarty News Desk. It was the only photograph I could lay my hands on in a hurry! Right off the instruction manual's front cover... Ed.*)

IC-40G (UHF CB) gets changes...

Yes, I *know* we aren't a CB magazine, but many amateurs use UHF CB equipment at work, or with bodies like the **State Emergency Service**. Icom has decided that the IC-40G will now come with a BP-7 450mAH battery pack instead of the BP-70 which was a 270mAH version. This configuration will still give five watts output, but with a longer battery life.

Also available will be a heavy-duty industrial version with a CM-96 battery pack giving 2.5 watts output but with a *HUGE* 1200mAH capacity. (*Yawn... Ed.*)

Kenwood's new duo/tri-bander arrives...

Last month's **Amateur Radio Action** carried a surprise advertisement for the shiny new Kenwood TM-741A duo/tri-band transceiver, despite earlier rumors that it was not likely to come to Australia. The unique feature of the TM-741A is its ability to add a *third* band module, and you can stick the whole thing under the seat or in the boot for a bit of added security.

Specified outputs are 35W on 70cm, 50W on two metres and (optionally) a muscular 50W on one of 10 or six metres, or 10W on 23cm. Priced at \$1338 for the basic radio and \$420 for band modules, this radio should prove very popular indeed. Look out for an upcoming review.

(*Actually, the review will be a whopper — we're going to use this radio as a 'test case' to model how to install mobile transceivers. Stay tuned! Ed.*)

Keys Keys Keys!

Yes, CW is still around, despite rumors to the contrary. A new book by **Dave Ingram**, K4TWJ, only serves to confirm this. His new book is a pictorial tribute to the way it *used* to be done, and the way we still send CW. Full of photos from cover to cover, this book is a must for any keen CW operator. Look out for a review very soon.

Have you been modifying?

Believe it or not, one of the most popular pastimes for amateurs is modifying their radios, but the strange thing is you don't seem to want to *tell* us about it. If you have modified anything why not write us a note of what *you* did — and what *it* did for the radio. Drop the editor a line at GPO Box 628E, Melbourne 3001 — and remember, if we publish your work we'll *pay* you for it! Please make your diagrams very clear, and typed or disk-based manuscripts are best bet.

ZL prices

Your editor has been the prophet of doom for some time where our equipment prices are concerned, so we're going to fuel his general air of despondency this month by running a few current ZL equipment prices past you.

But we'd better warn you to be sitting down before you go any further, because these figures are a good indication of what happens to the prices of imported goods when the economy *really* drops dead:

Kenwood TH-27A	NZ\$875
Kenwood TH-77A	NZ\$1,420
Kenwood TM-241A	NZ\$1,085
Kenwood TM-731A	NZ\$1,727
Kenwood TM-741A	NZ\$2,255
Kenwood TS-450S	NZ\$3,995
Kenwood TS-850S	NZ\$4,970
Kenwood TS-950S	NZ\$9,230
Kenwood TS-950SD	NZ\$11,250
Yaesu FT-23R	NZ\$789
Yaesu FT-411E	NZ\$895
Yaesu FT-470	NZ\$1,470
Yaesu FT-767GX	NZ\$7,360
Yaesu FT-990	NZ\$6,290
Yaesu FT-1000	NZ\$10,599

Accessory items fare no better, either. Try these:

DSP-100 Digital Signal Processor	NZ\$1,450
PS-51 power supply	NZ\$905
PS-52 power supply	NZ\$990

You'll note these prices are for **Kenwood** and **Yaesu** products only. When we ran one of the **Icom** prices past the editor, he fainted! In case you're not familiar with VK prices, all of these are around double the Australian equivalent — and, on average, the ZLs earn less than we do, even taking currency differences into account. (*Can you even imagine the price of an IC-781 there? Ed.*)

So please let's have no more grizzling about our VK prices — given income adjustments, most of our prices are equivalent to, or actually *cheaper* than in the US or Japan!!

But we warn you once again: this delightful state of affairs **will not last**. You've been told...

NEWS
DESK

APRIL'S NO FOOL.
SHE ALWAYS SHOPS AT ROD IRVING
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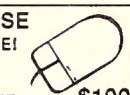
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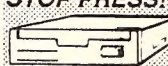
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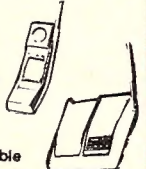
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Did you know...

...that if you are using **811A** tubes in linears which mount the tube horizontally you can get tubes especially assembled for this type of operation? When the tubes are made the orientation of the filament assembly is normally not controlled. If you are using the tubes horizontally you can get a significantly-reduced lifetime and heater-to-grid shorts if you are not careful. So, if you are using these tubes horizontally then make *sure* you ask for **horizontal 811As** or you might just get vertical ones (and no, this isn't April the First, either!). (*It might not be, but you're bound to get some pretty strange looks... Ed.*)

...that American-made valves are getting harder and harder to find. The reason is simple — they don't make them any more! Only the really large transmitting tubes are now made in the US, with everything else coming from eastern Europe or China, with some odd things appearing from India. Thankfully, you'll find that American (usually GE) 6146Bs are still readily-available for use in Kenwood and Yaesu valve-output radios, because the Chinese ones just don't seem to cut muster.

But with tubes such as the 811A and 572B it is difficult and expensive to get anything other than Russian or Chinese types. Make sure you get matched pairs or sets if you use more than one in an amplifier, and *always* replace the tubes as a set. This way, you shouldn't have too much trouble. Sometimes you may need to adjust bias and HV supplies to get good long life from the newer tubes.

The one valve you *will* have a lot of trouble finding is the **7360** beam modulator tube found in some very early transceivers such as the Yaesu FT-200. If you're planning to do some work on one of these radios, then make *sure* this tube is okay before you go too far, or the cost may make the project uneconomical.

Theory classes in Sunbury...

Victoria's Sunbury Amateur Radio Club (SARC) will be commencing Theory classes after Easter. The classes are run to help people pass the Theory exams, and will be held at Sunbury Secondary College each Thursday night from 7:30 until 9:00 pm. The classes will commence on April 23. More information is available from Sunbury Amateur Radio Club, P O Box 915, Sunbury 3429

Latest ARA competition winners...

We had you all guessing with our recent 'find the fiddled foto' contest! You were asked to find the photograph which had been tampered with in either of two issues of the magazine — and about three zillion of you *did*. The last one was on page 3...

Anyway, this month we get to name the fortunate winners in our **Dick Smith Electronics-Mobile One Win a Two Metre Base Antenna Contest**. Right, a nice big drum roll, please someone, and we'll pull them at random right *now*...

Our first winner is... **Scott Watson**, of Lindendale, NSW. Scott is joined by... **M Nicklin, VK6HY**, of Beechboro, WA, and **A Payne** of East Doncaster, Victoria and, finally, by **RP Hurst** of Brisbane, Queensland. Congratulations — you'll be hearing from us soon.

For those of you who missed out, why not drop by your local Dick Smith store and pick up a CDB-146 (cat D-4820) for just \$49.95? At that price they're a steal!

ARA Exam Service...

At long last, the ARA Exam Service is about to get off the ground. We will be conducting examinations for all levels of amateur operators' licence here in the middle of Melbourne during April, and plan to run monthly examinations from then on.

We think we're the only service to operate right in the middle of town (at ARA), so many people could find our new service of interest to them. We'll be starting on a Saturday, although weekday evenings can be arranged if there's enough interest.

If you like a schedule of dates and fees, write to **ARA Exam Service**, GPO Box 628E, Melbourne 3001. Alternatively, you can phone the editor for more information after 10am each day on (03) 601 4203 or *after 7pm only* on (018) 35 3599.

NEWS DESK

Gosford 1992

there and back in a day

By Neil Duncan and Chris Edmondson

We all know about those events popularly known as field days. You know the sort of thing — a gathering of an amateur or two, hordes of second-hand gear for sale, commercial displays and, of course, a handful of other similarly-minded individuals to meet. Dayton, Ohio, is the venue for a little annual show (the world's biggest, actually), Victoria has its Ballarat, Bendigo and Moorabbin numbers, and there is a Mt Gambier, SA, assemblage now and again. Things happen from time to time in Perth, while Queensland has countless shows spread all the way from the Gold Coast to Cairns.

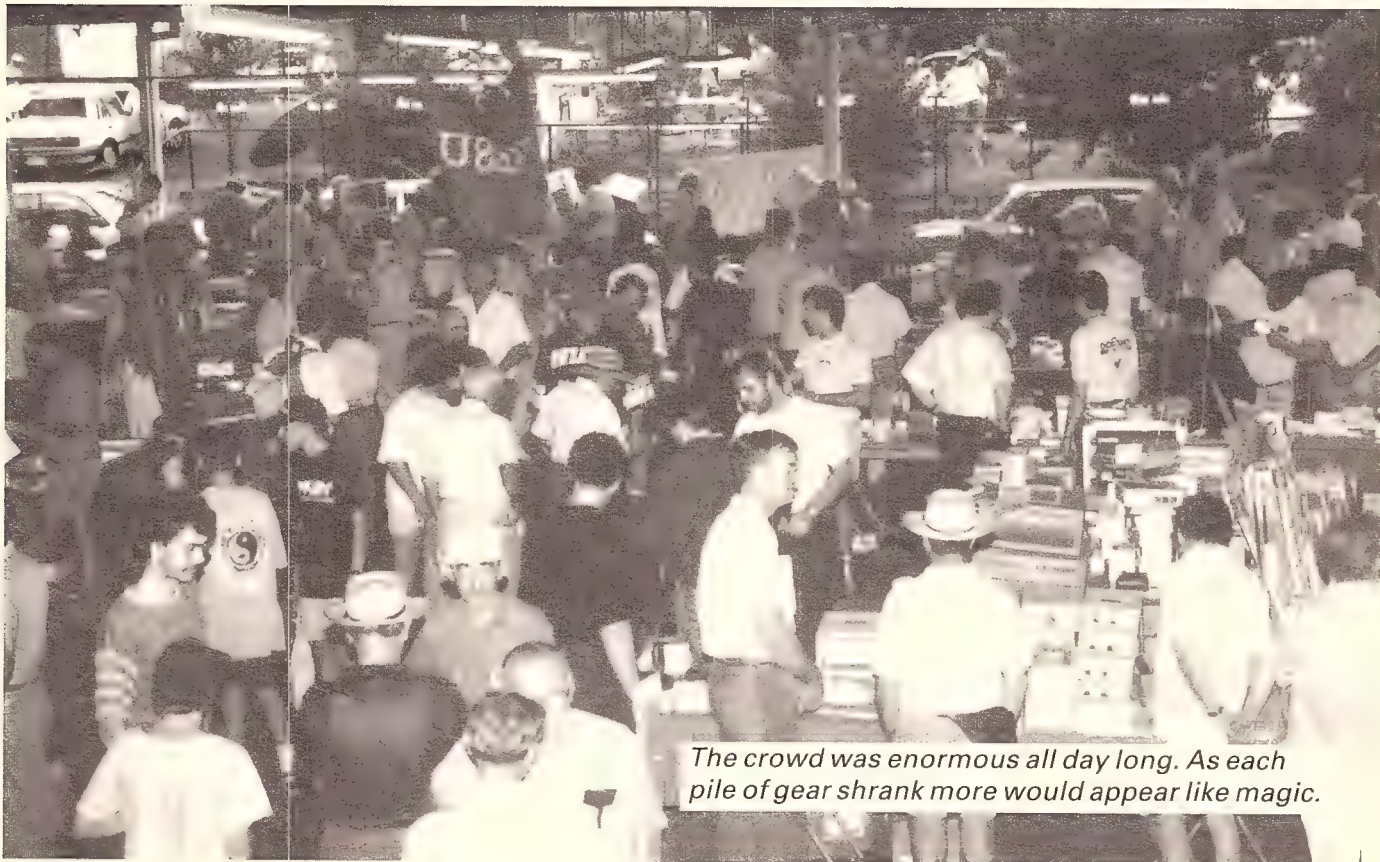
And, of course, there is the **Gosford Field Day**.

Essentially, these events are an excuse for hundreds of amateurs (tens of thousands of them in the States and some European nations) to gather and do the thing we do best — *waffle*. Gosford hosts what is probably the largest of the shows in Australia.

A little trio consisting of editor **Chris Edmondson**, **VK3YID**, reviewer **Neil Duncan**, **VK3OK** and *On-Six* columnist **Steve Gregory**, **VK3OT** fronted up at the

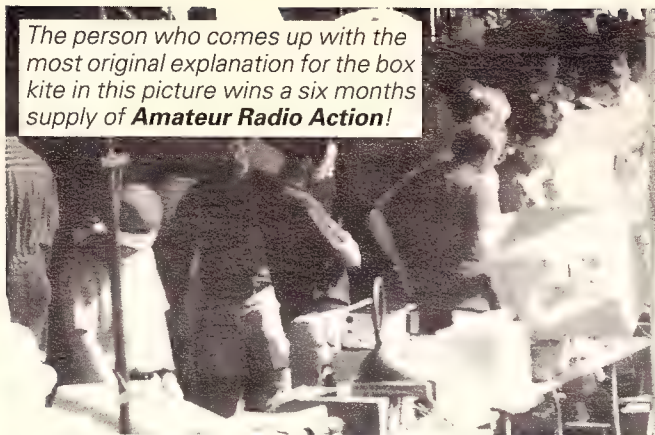
Gosford race course and showground at 0930 on the morning of Sunday, February 23. Actually, just fronting up in itself was no mean feat when you consider that the three of us live in Victoria — two in Melbourne and one in far-west Hamilton — and that we'd spent the previous night snug in our own beds. That 0330k start to catch the first flight of the day was a bit rough on the old system! (But Steve's start was even earlier — he flew his own plane to Melbourne's Tullamarine Airport and met us there!)

Consider the nature of the conversation on the way to Sydney, too. Steve raved on and *on* about six metres, talking primarily in a pseudo-verbal narrow-band CW mode. Neil, meanwhile, carried on and *on* about HF rigs and which brand was best, while Chris tried to ignore us both by staring out the window as the scenery flew by. (He also embarrassed us both by asking the hostie for a copy of **Amateur Radio Action** when she has handing out the courtesy copies of *Womens' Weekly* and the like. She may have guessed what was going on by glancing at the three **Amateur Radio Action** T-shirts being worn in public for



The crowd was enormous all day long. As each pile of gear shrank more would appear like magic.

The person who comes up with the most original explanation for the box kite in this picture wins a six months supply of **Amateur Radio Action**!



the first time...) (Well, what flaming good is an airline if it doesn't hand out proper magazines? Ed.)

Now, what do you think a good venue for a field day would be? A flashy convention center? Perhaps somewhere like the Sydney Opera House, or maybe the State Theatre (should Gosford have either). No, the local race-track was *just* the spot. (Of course. There's a field in the middle of it.) Getting there was a relatively simple matter of locating the field (you could tell where it was by observing the increasing number of funny antennas the closer we got) conning our hire car's way through the appropriate gate, and into the car park (which was chockers by then. It had been closed off hours earlier, but Chris wangled his way past the security guards at the gate (by zooming right through the middle of them at 40 miles per hour) and found a vacant parking spot inside the facility, right by the entry gate. He does things like that...) (heh heh) and finally to the pedestrian turnstile. Bingo, instant hamfest.



And *what* a sight we were greeted with! Hundreds and *hundreds* of verrrry typical-looking amateurs all apparently in a state approaching mild hysteria. (We hasten to add that we do not intend to describe a 'typical-looking amateur' but, collectively, they were definitely scurrying around looking for bargains, waving their hands around and generally being, errr, typical radio amateurs.)

First stop: the horticultural center. We estimate there were around 200 sweaty bargain-hunters in that hot, steamy and *very* noisy barn, boiling but buying beaut bargains, boards, bits bags and bygone boxes. (B-b-b-boy! Ed.) Typical items for sale there ranged from recent VHF rigs,

through miscellaneous boxes of components right down to a disembowelled teletext decoder which I suspect used valves (or was it a spark gap?).

Neil bought a couple of die-cast boxes for a project and both Chris and Steve grabbed a \$5 telephone each. (Not a bad deal for a complete, operational electronic switchboard system with 100 digital extensions! Glad Australian Airlines was understanding! Ed.)

We then pressed on to the commercial section where, if such a thing is possible, the press of people was even greater. **Andrews Communications, Blamac, Dick Smith Electronics, Emtronics, Icom Australia, Kenwood Electronics Australia, Stewart Electronics, Vicom-Scalar** (in alphabetical order, you note) were there — and that's just a few of the many, many exhibitors there to show off their wares under cover at the main betting ring near the racetrack itself. The setting all seemed so *appropriate* somehow.

Silicon Chip, Tiny Tots (oops, **Electronics Australia**) and, of course, the three special people wearing **Amateur Radio Action** T-shirts meant that Australia's hobbyist press was pretty well represented in all of its glorious aspects as well.

In fact, *all three editors* of those illustrious magazines came along to Gosford this year — another first! Actually, what surprised me was how normal, enthusiastic and good-natured these people were! (Hah! Conned him... Ed.)

Next stop — the main second-hand selling-by-consignment point, cunningly concealed in a large hall on top of a little hill. In there, row after row of trestle tables were set up with gear generously piled on top. Now, it was at about this time that some concerns started to set in. *Surely* a 20-year-old rig crudely converted to crystalised channel operation on two metres shouldn't cost as much as a recent model, fully-synthesised transceiver? That was only one example. Actually, quite a bit of the stuff was not only over-priced but it looked pretty beaten-up, too.

Ahh, that was *easy* to explain, we were told. Minutes after the gates were opened way early in the morning, surges of people had descended on this hall and simply demolished the bargains.

Come to think of it, we *had* seen hundreds of delighted bargain-hunters tripping out to the car-park with bundles under their arms much earlier on as we arrived. I guess they learned the ropes in previous years...

(Even an hour after the doors opened to the buyers there were loads of good bargains to be had. They were just hidden under some of the less-attractive stuff. I must say I was impressed with the level of organisation which had clearly gone into this aspect of the show — even if I was a bit shocked at the cavalier approach to security for the ... oh, I dunno — \$20,000? cash I saw sitting on a table!

Not knowing what was going on inside the hall, I was horrified when I flowed with the throng towards the entrance to the hall, only to have some gorilla try to snatch my hand-held cellular phone from my hand and seal it inside a plastic bag! I refused point blank — and that's why there's no photographs from in there... Ed.)

Some of the highlights are worth documenting for you. The commercial displays were simply excellent. A very high proportion of the latest Yaesu, Icom and Kenwood gear was clearly visible. You were actually allowed to *touch* it (except the *Silicon Chip* magazines — hands off, Neil was gruffly instructed!). Emtronics proudly displayed its Australian-made range of gear including its latest HF amplifier

and several antenna tuners. Its sparkling new range of HF Yagi antennas was proudly assembled outside too.

(It's sad that the refreshing openness of the trade stands had such a down side — two of the larger outfits had brand new transceivers stolen from their displays, right under the noses of the staff there, and in full view of the whole crowd. If shows like this are to remain hands-on ones, we have to find some way to beat these unscrupulous crooks. Otherwise the gear will end up behind glass! Ed.)

The WIA had some of its wares on display (in a way). An 'emergency' porcupine on wheels was parked in the main walkway to be seen and admired in all of its glory. What else was there? Let's see, there were the ATV and packet displays, the Vicom-Scalar antenna stall (including some excellent bargains — it's great to see this proud outfit getting enthusiastic about amateur radio again), a soldering gear distributor, a full satellite receiver station, a vintage radio set-up and even some sort of OB vehicle for the local broadcast station.

The biggest bang of the show...

Gosford obligingly turned on some delightful weather for the day. We left a magnificent Melbourne dawn, hardly seeing a cloud until we crossed the state border. The closer we got to Sydney, the blacker the clouds were — and the higher the relative humidity. I idly wondered if we had caught the wrong plane and climbed out at Cairns or Darwin.

Gosford's weather was tropically-hot and steamy until a thunderstorm brought some welcome post-lunch temperature relief... and the other entertainment which accompanies a thunderstorm.

The loudest thunderclap we have ever heard in our lives resounded right on top of us as the storm moved through. Its noise arrived simultaneously with the lightning and was a key point of the afternoon. For a start, many people expressed surprise in typical Australian manner. One bloke I saw had just pressed the power key on a huge linear amplifier and you'd better believe he was *particularly* impressed with the response.

(Neil's bit about the loud thunder is absolutely spot on. There had been a few minor claps in the distance, which nobody paid much attention to, then all of a sudden came the biggest bang I have ever heard. Those closest to it saw it touch down in a big, wet eucalypt about 30 metres from the major pavilion under which I was standing. (We'd just finished eating our lunch right under it!) I saw a scene of stark terror in most eyes as people tried to come to grips with the enormity of it all, then we KNEW they'd got a big scare because they all started tittering nervously. Steaming leaves and other bits of the tree were still flaking off, and there were occasional wisps of smoke from the hapless thing, for several minutes after the explosion.

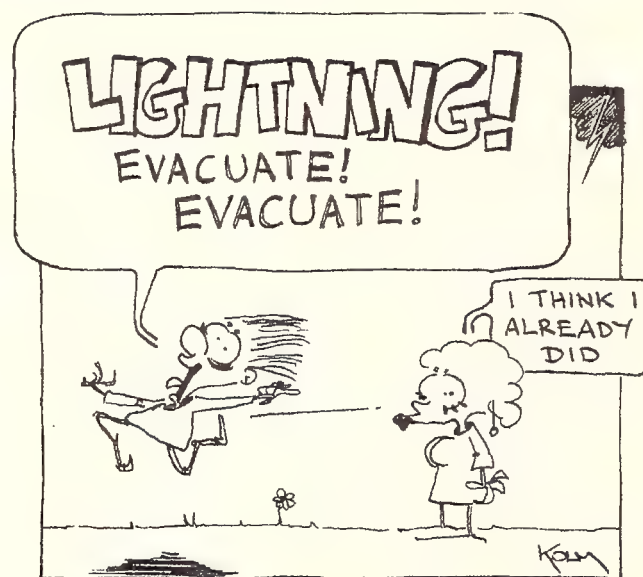
*But the Funniest Reaction Of All Award goes to the obviously calm-natured and serene person serving on Stand X. At the time, this individual was holding a big sheaf of product brochures in one hand. Virtually simultaneously with the bang, and in one fluid movement, came a scream (itself almost as loud as the thunder), the hair stood on end, and the brochures went straight up in such a fashion that they described a graceful parabola to a fair altitude above the crowd before dispersing and fluttering groundwards like hundreds of autumn leaves. The onlooking eyebrows were raised even further when the scream turned into a double fortissimo **SHIIIT!!** in the best operatic soprano*



I've heard in a long, long time. It was quite a spectacle. If only I'd had the video running at the time... Ed.)

Towards the end of the afternoon, one of the distributors launched into what is evidently one of the attractions of the show: an "auction". Perhaps his staff simply couldn't be bothered loading the unsold stuff back into the car... Anyway, after selling some minor items (some at fair prices, others... well, they *paid*, didn't they) the auction degenerated into a shameful show in which the trader actually threw away hundreds of dollars worth of smallish gear — with items being hurled straight into the crowd. One of the heavier numbers hit editor Chris fair and square on the back of his head (*I thought it typical that insult was added to injury when the stand's owner laughed uproariously at my predicament. I didn't even get an apology! Yeah, very funny. Thanks a heap for your sympathetic attitude. What a turkey... Ed.*) and another piece chucked (a NiCd pack for a cheap hand-held rig) split open on the ground and spewed forth. Countless other items were snatched up by the greedy mob.

Try throwing bread to starving seagulls — it looks the same. I bet these delighted bargain-hunters didn't even *hear* the thunder! Frankly, I'm not sure the folk on the *other* commercial stands were too impressed at all. (*To my mind, sore head or no, this debacle was a very disappointing down side to the whole show — one which, in my opinion, dragged the otherwise good and happy tone of the whole event right down. Come on, Gosford organisers, surely you don't have to let that sort of nonsense spoil your day and demean your hard work? Ed.*)



The competitions...

One aspect of such shows as those at Mount Gambier and Ballarat shows is famous — the competitive events for those who aren't there just to buy equipment at one-off show special prices. The competition of great fox-hunts through unfamiliar territory, the unique nature of scrambles where most of the competing stations are located inside a 500-metre ring, the home-brew contests... all add up to the unique flavor of a real Field Day. That's what it's all about.

I'm told that Gosford used to offer these things too but, in 1992 at least, there wasn't a single fox-hunt nor a scramble in sight. And the only home-brew equipment carted to the show was for sale. I was mightily disappointed, but I understand the choice of the show organisers to concentrate on the more commercial aspects.

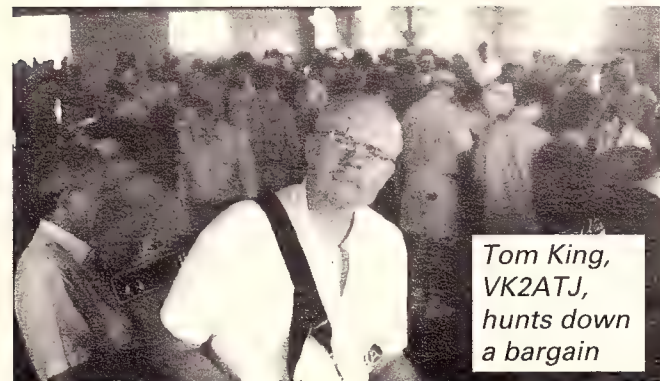
There is really no question that, in the commercial area at least, the Gosford show is without peer in this country, but we reckon it lacked some of the pizzazz of the events where people also go to have a bit of fun. The Gosford organisers deserve much praise for the completeness of their arrangements (the bus tour which dispatches bored spouses to the local reptile park is a particular stroke of genius — are they trying to tell 'em something?), but Neil

and I have thought a lot about it, and have a few suggestions for Gosford and, for that matter, any other budding hamfest organisers out there, whoever you might be.

The commercial side is useful for those with a pocket bulging

with money, as this is one place where you can see all of the gear at the one place — even if most of it isn't hooked up to antennas. But most of us aren't so lucky, and we missed the competitive side of things.

Essential ingredients for a *real* Field Day should include not only the excellent commercial displays and second hand stalls of the Gosford Field Day but maybe a few more things. Gosford had some of these following, but here is our ultimate wish list for 'one with the lot':



Tom King, VK2ATJ, hunts down a bargain



Co-author, Neil Duncan, VK3OK. Note his cute shirt. Yours awaits you for just \$15 posted. See P 6.

- talk-in facilities for out-of-town arrivals, with slick, trained operators on HF as well as VHF.
- non-commercial competitions and activities such as fox hunts, scrambles, 'best home-brew', Guess-The-Resonant-Frequency contests, and the like, to help make the day real fun for all visitors, rather than confine the activity to running an extended shopping mall.
- actually run some quality on-air stations (for non-amateurs to see, not just for prospective purchasers to try out). This should include some special mode stations actually in use and doing something — and many more would be hooked! Just think of the unique nature of the audience you have gathered together.
- major door prizes derived from the gate charge. (*Nah. Better pick something other than a door, mate. It wouldn't fit on the plane.*)
- some fun activities such as a 'Chuck the old rig'. The person who turfs it furthest wins something. (*Just look 20 years down the track — will they be hurling IC-781s, TS-950SDs or FT-1000s?*)
- lots of short but powerful lectures. Try advertising for speakers

well before the day and promise to publish their talks in a collation in booklet form if the stuff is supplied in advance — on disk. Gosford's lectures were particularly good.

- sell T-shirts or caps saying Gosford-92 (93?) or the like.
- turn the PA system down a bit. Not all amateurs like headaches.

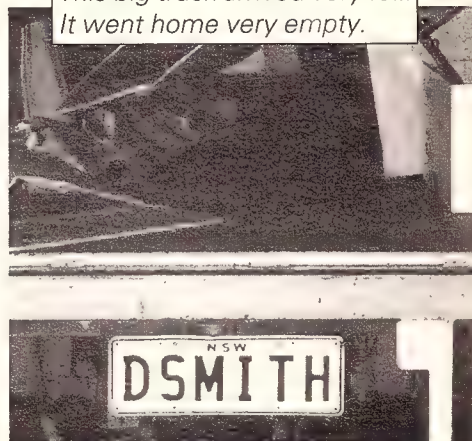
Nevertheless, the Gosford Field Day went very well and, despite its very heavy reliance on the commercial aspects of the hobby, was of great value to a lot of people.

Our final comment is a happy one. It was a joy to

meet so many **Amateur Radio Action** readers. Thanks for your support, encouragement and suggestions. The warmth and enthusiasm of everyone we spoke to made the long trek up there especially worthwhile!

Thanks you, **Central Coast Amateur Radio Club** and the **Gosford Field Day** committee, for inviting us to your day. We enjoyed our visit to Australia's largest amateur event, and we certainly look forward to coming again.

This big truck arrived very full. It went home very empty.



Drake R8 communications receiver

— an end-user's perspective —

By Craig Seager
Goulburn NSW

Rarely are the names we see in electronics magazines as evocative and well-respected as that of American communications house R L Drake. The company's been around almost forever, and has produced some memorable equipment over a span of many years. Its latest weapon is a communications receiver which has been very well-received wherever it has gone. And now, thanks to a small Melbourne-based importer, the Drake R8 is available in Australia. And who better to review a SWL's receiver than a SWL? We shipped our review receiver to our SWL Notes man in NSW...

I've always been a firm believer in 'no frills' DXing and have steered away from receivers with vast arrays of gadgetry there for its own sake. Bells and whistles designed only to catch the eye of the intending purchaser, but perhaps having little serious application at either the hobbyist level or for the casual listener, have usually left me cold. Having had the opportunity to road test the latest offering from the R L Drake company, however, my views have mellowed somewhat and I think that I could even come to depend upon some of the more useful features offered in this receiver of undoubted quality.

When putting a receiver at the top end of the home-user market through its paces, the issue is not really whether it will 'hear' stations that others will not, but rather the level of operator convenience and the readability of signals down in the mire or plagued by co-channel interference. The R8 certainly measures up on this score, and suffice to say that the basics such as sensitivity and selectivity are what one might expect from a radio retailing at a shade under \$2,500.

Long-time shortwave enthusiasts will be aware that the Drake trademark has been synonymous with quality receivers for many years now. My memory stretches back to the SPR-4 and SSR-1 sets, reliable workhorses in their own right, and more recently the redoubtable R7 and R7A, both at the forefront of the latest generation of communications receivers — competitive with the best offerings from the likes of Kenwood, Icom and JRC.

The Drake people certainly make the most of the fact that the R8 is manufactured in the USA, and the publicity blurb makes several references to this aspect. This is no doubt a selling point for many, but I'm not sure that is entirely relevant in the present age, with similar (or better) quality emerging from some of the Japanese manufacturers of

communications equipment. Having said that, there is no doubt that the R8 is sturdily-constructed and the controls give the impression of durability, having a 'rubbery' feel. Sturdy in the modern sense doesn't necessarily mean built like a Sherman tank; the R8 weighs only 5.9 kilos, surprisingly light for its dimensions.

Coverage is continuous from 100 kHz to 30 MHz, and an optional VHF converter is available at extra cost giving access to the ranges from 35-55 and 108-174 MHz. This extra range, of course, excludes the Australian FM broadcast band. Tuning may be achieved in three ways; by far the quickest is direct keyboard entry. The R8 thinks in Megahertz, however, and it takes a little time to get used to entering the decimal point. Up/down buttons increase or decrease the frequency in fixed steps of 100 kHz, whilst for more delicate tuning a standard rotating dial is furnished. The dial incorporates variable speed tuning; in other words, the faster the dial is rotated, the faster the tuning speed.

One of the nicest features of the R8 is the five selectivity positions. The widest is stated as 6 kHz (at -6 dB), quite adequate for normal program listening and providing good tonal quality. For more serious applications, there are also settings for 4.0, 2.3, 1.8 and 0.5 kHz (all at -6 dB). The narrowest of these would, of course, be useless for voice transmissions, but is very handy for CW or RTTY reception. For general tuning around, I found the 4.0 kHz filter to be the best compromise, whilst the 2.3 kHz filter automatically comes into play when USB or LSB are selected.

To avoid the need for a multiplicity of controls, Drake has combined various facets of receiver operation into six dual purpose function keys, the effects of which are alternated by depressing a button at the base of the numeric keypad. This aspect of the receiver's operation can be a source of annoyance. For example, the bandwidth function key must

be pressed four times to switch from the widest to the narrowest filter. Similarly, to move from AM to USB mode five presses of another function key are necessary. Settings are displayed above each key on the large, backlit LCD display. The numeric keypad itself can also present a little inconvenience due to its location on the left hand side of the front panel. This is fine for 'south paws', but can be a little awkward for the rest of us!

The frequency display is capable of resolution to 10 Hz, switchable by way of the step function key. The display also doubles as a 24-hour format clock, which retains the time for up to 20 minutes after loss of power. An on/off timer function is included.

Audio quality can only be described as a compromise. For practical reasons the speaker is mounted in the top of the cabinet, which detracts somewhat from the desired audio, though an external speaker is listed as an optional extra. I have it on good authority (*Me! Ed.*) that the external speaker makes general listening much more pleasurable, though a reasonable quality set of headphones also suffices. The tone control is limited and does little for the treble response. All in all, I find the sound on my (much cheaper) Kenwood R600 to be more flexible in comparison. (*I chose not to send the optional speaker to Craig at review time, but I used the receiver at home for several days, and found the external speaker unit made listening to quality music, for example, far less of a chore. The optional unit is not cheap, however, and any reasonably good enclosed speaker should improve the tone. Ed.*)

There is no question that the R8 has few rivals in the 'features' department, with a number of nice additional touches which will sway the discerning buyer to splurge that little bit more to ensure a greater level of listening comfort. One of my favorites is the AM synchronous detector, which generates a synthesised 50 kHz carrier which is locked to the received AM carrier. The end effect is that audio distortion or 'fading' caused by propagation effects can be minimised, whilst manual adjustment of a passband offset control changes the bandwidth to cut down

interference. Moving the main tuning dial automatically disengages the detector.

A one-step RF attenuator circuit may be activated to provide 10 dB of attenuation to the received signal, and this is coupled with a rotary RF gain control. Conversely, Drake has incorporated a 10 dB preamp which is available for use above 1.8 MHz. No doubt this has been excluded from the lower frequency range to prevent excessive overloading in the receiver's front end amongst the powerful signals on the medium wave band, however it would be nice to at least have the option of being able to switch the preamp in when tuning the long wave band, which is hardly flooded with strong stations in this part of the world. Having said that, the R8 is by no means 'deaf' on medium wave, and the West German transmitter at Langenburg on 1593 kHz came in like a local, using only a crude, unamplified box loop antenna. (*Funny. I could only hear a strong ZL on that frequency! Ed.*)

Other useful features include a squelch control, notch filter, AGC fast/slow, a moderately-effective two-position noise blanker, and a key to select either of two VFOs.

Aficionados of 'bells and whistles' will be placated by the R8's 100 programmable memory locations which can be used to store and recall commonly-monitored frequencies. The receiver's various settings may also be stored in any memory location. Scan functions are provided, programmable by six keys on the numeric keypad. Three scan modes are selectable: (1) scan all memory locations (2) scan all unlocked memory locations within a user-selected list of blocks and (3) scan from the frequency in VFO A to the frequency in VFO B. There are also three scanning methods; a 'seek' key stops at the first carrier detected, another key will cause the receiver to stop at the detected carrier for five seconds then resume scan, and a third stops at the detected carrier until the carrier drops for five seconds. Learning all of the memory and scan functions means closely studying three pages in the receiver manual, a task which I had neither the motivation nor stomach to undertake! (*Why not? The book is clear and well-written. Ed.*)

In common with many of the more recent tabletop receivers, Drake's R8 provides a



The review receiver was fitted with the optional VHF converter.

standard DE-9 connector for remote computer control via an RS232C serial interface. The connector may be attached to a basic dumb ASCII terminal or a computer such as an IBM XT/AT running a terminal emulation program such as PROCOMMPLUS or BITCOM. Computer connection allows complete control of the settings and programming capability of the R8, aside from analogue controls such as volume and RF gain.

I understand that there is a software package now available commercially for IBM XT/AT and compatibles to allow for enhanced operation, and I have seen at least one shareware program on the local bulletin boards which will also do the trick. Unfortunately, I didn't have access at the time to the necessary cables and plugs to try it out.

Operation of the R8 takes a little getting used to, particularly if one is not used to such an array of options and controls. The last time I purchased a communications receiver was more than 10 years ago (poverty is a terrible thing!), and I'm more than a little embarrassed to confess that it took me two or three minutes to even get an intelligible signal through the speaker... until it finally became apparent that the set was engaged in FM mode!

FM on a garden-variety HF receiver is, of course, only a relatively recent occurrence. Once one gets the hang of things, however, operation could even be described as fairly intuitive and regular usage becomes a pleasure which goes far beyond the novelty value of a new toy. One of the things which struck me early on is that the R8 runs fairly hot; not quite warm enough to fry an egg on the upper metal case, but rivalling the older valve receivers such as my trusty Trio 9R-59DS. This would appear to at least partly relate to the power supply, as the set remains surprisingly warm even when it is not in use (clock still displayed). Frequency stability does not appear to be affected, however, and little or no drift was noticeable at any stage.

The acid test of any receiver at this location is image rejection. I'm in the unfortunate position of being able to view the mast of the local medium wave broadcaster 2GN through my back window and, as one might expect, double spots and spurs appear in all sorts of unlikely places on the bands whilst using any solid-state receiving gear. An area of high field strength such as this is not really a fair environment in which to make conclusive judgements, but for comparative purposes the test is a useful one.

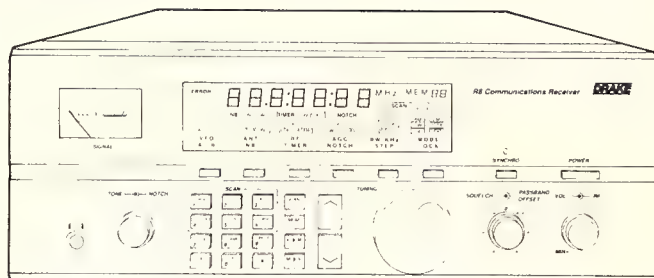
As predicted, the R8 was not exempted from some of these spurious responses, but coped rather well when judicious use was made of the RF gain control and a balanced feeder was introduced to the antenna input. There were no problems at all with receiver-generated spurs on the medium wave band itself, partly due to the reduced sensitivity offered in that range.

At around \$2,400 retail the Drake R8 isn't going to be the set you'll buy if your interest is just dabbling around the shortwave bands once in a blue moon or tuning into the BBC news (though it will do both of those things admirably!). The dedicated DX hobbyist, however, will find the R8 a consummate receiver, competitive with the likes of JRC's NRD-535. The automated listening features will attract many, but ultimately it is the Drake reputation and the R8's arsenal of tuning aids which dominate the sales pitch and make the R8 a worthy successor to its illustrious stablemates, the R7 and R7A.

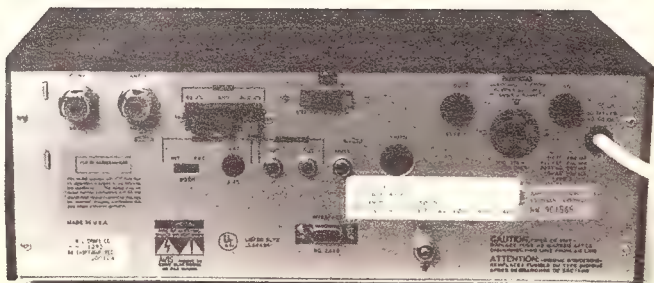
Amateur Radio Action thanks **ZRV Electronics** for the loan of the review receiver.

SPECIFICATIONS

Manufacturer	RL Drake Company, USA
Australian supplier	ZRV Electronics, Eltham, Victoria
Coverage	100 kHz to 30 MHz
Modes	AM, FM, CW, RTTY, LSB, USB
Antenna Inputs	50 or 500 ohms unbalanced
Claimed sensitivity (at 10 dB S+N/N)	
SSB, CW	<1 μ V, 0.1-1.5 MHz <0.5 μ V, 1.5-30 MHz <0.25 μ V, 5.0-30 MHz (preamp on)
AM	<3.0 μ V, 0.1-1.5 MHz <1.5 μ V, 1.5-30 MHz <0.8 μ V, 1.8-30 MHz (preamp on)
FM (12 dB SINAD)	<0.5 μ V, 1.5-30 MHz
Size and weight	334 X 134 X 330 mm, 5.9 kg
Frequency stability	± 10 ppm, -10° to 50° Celsius
Frequency accuracy	± 100 Hz, -10° to 50° Celsius
Selectivity	
AM	6 kHz @ -6 dB, <12 kHz @ -60dB
LSB	4 kHz @ -6 dB, <8 kHz @ -60db
USB	2.3 kHz @ -6 dB, <4.5 kHz @ -60dB
RTTY	1.8 kHz @ -6 dB, <3.6 kHz @ -60dB
CW	0.5 kHz @ -6 dB, <1.5 kHz @ -60dB
FM	12 kHz @ -6 dB, <25 kHz @ -60 dB
Image rejection	>60 dB, 100 kHz to 1.5 MHz >80 dB, 1.5 MHz to 30 MHz
Clock accuracy	± 2 sec/month
Power requirements	240 VAC, 11-16 VDC @ 2 A
IFs	1st IF 45 MHz, 2nd IF 50 kHz
AGC Threshold	0.8 μ V
Attack time	1 mS
Release time	SLOW: 2 sec, FAST: 300 mS



The front panel is quite logically laid out (**above**), and takes very little 'getting used-to' time to get the hang of. Most controls are easy to use, too. Note the RS232 connector on the back panel (**below**). Using this facility opens the world to any number of memory channels, to a wide variety of scanning options, and to a far greater overall versatility.



Portrait of a cartoonist...

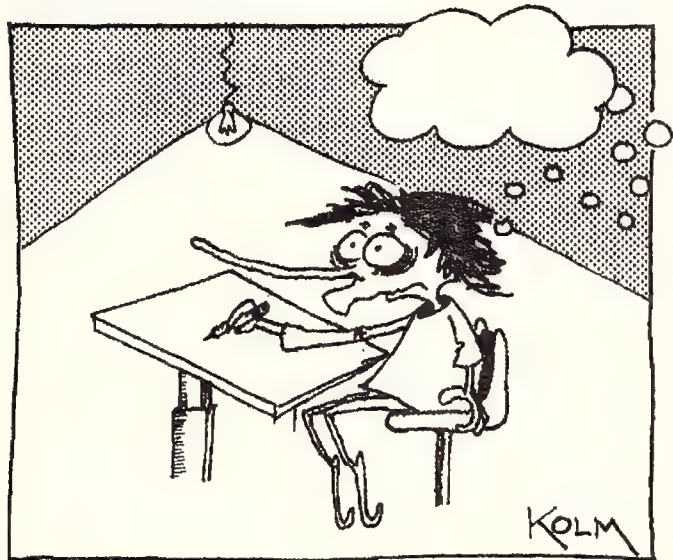
By Neil Duncan, VK3OK,
Heathmont, Victoria

Regular **Amateur Radio Action** readers will have detected a certain recklessness in the cartoons scattered in places between its covers. What sort of a person writes and draws such material (and how does he get away with it)? Surely such irreverent material seems hardly appropriate for the hallowed pages of such a prestigious amateur radio journal!

For a start, where does the fellow live? Take a globe of the world and poke a stick through it. Start with one end at the **Amateur Radio Action** offices in Melbourne and pass it thorough the center of the globe. The stick will emerge not too far from where John Kolm lives. No, he's not in the Atlantic Ocean but in Washington DC, USA.

That little town, complete with the White House, Abraham Lincoln's statue and the Capitol, has one of the highest murder rates in the world. For our cartoonist, however, this is a safer environment than living anywhere *near* the complaints department of the **Amateur Radio Action** empire. Actually, it is just about as far away as you can get!

Given the amazingly inexpensive internal airline fares in the US, it was just *too* tempting to call in on John while I was over there and to see a little about what makes this fellow tick, as well as having a look around at that neck of the woods at the same time.



John, who is just about as Australian as you can get, is on exchange to the US in a government job of some sort. Even John is unsure of exactly what he is doing over there, it seems. To present a picture of John's environment though, let's follow him through a typical day:

To leave his humble abode, you go down three flights of stairs into the car-port, start the car and press the radio-controlled garage door button, then back out. John's car includes some horizontal lines on its top, however. These are little reminders of the many times he has "...ducked

back upstairs to switch the fax machine on..." The garage door gets the car on the way down.

John starts his day with the average American breakfast: hash browns, hominy grits, eggs sunny-side-up on biscuit and a cardboard vat of coffee. Yes, everyone eats out at breakfast time! A more traditional breakfast may include doughnuts and sticky buns. (*You're not exaggerating slightly, are you Neil? Ed.*)

John's usual work-day destination lies along one of those rustic little roads leading into the city. These are 10 lanes wide and contain an amazing density of cars. Imagine, if you would, all of New Zealand's sheep being herded around a smallish racetrack. That gathering would share the speed, manners and intelligence of the freeway drivers that I was treated to see.

Today, however, John is looking for inspiration for some cartoon material. Partly to that end, he takes me for a tourist's view of some of the town's sights. First on the list is a winery in the backwoods of Virginia, just over the border and not that far away. Here I have my first experience of the language barrier posed if you are an Australian in the States.

Picture the following scene: John is asking a 'good old boy' in the winery for some details of his products.

"G'Day," says John. "What sort of grog d'ya sell here?" The response, as near as I can describe it, sounds like someone saying "NNYOWW", over and over in a nasal manner with the mouth opening and closing in a wide and grossly-exaggerated manner.

After about three repeats of this pair of interactions, smiles and frowns are exchanged and the fellow disappears out the back, to emerge with a dozen-carton of wine. These turn out to be a heavily-scented and particularly sugary red, well suited to serving with a dessert and to last-resort drinking. Such wine deserves a laying down period — *after* you drink it.



Now, this all goes very well until John puts the carton on top of the car while he looks for his keys. The car alarm *instantly* sounds off, causing absolute pandemonium.

Back-woods people appear from everywhere, some carrying guns, others running. Ladies scream, a cow milks in its pants (*Now I know you're kidding! Ed.*), and, generally, no-one copes well at all. These places are normally *verrry* quiet!

After all that is over, I am told that no inspiration for a cartoon has yet come forth, so we head off. The next stop is for lunch where suitable creativity will *surely* be forthcoming. John telephones ahead on his yuppie car-phone to see if a place he knows is open. A lady with a Southern

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drawl answers over the speaker-phone: "Hello, Barry's Diner?"

"G'Day. Are you open for lunch today?"

It seems a simple-enough question.

"Excuse me?" comes the reply. As at the winery, this two-line banter also repeats itself several times. Finally, in mock annoyance, John repeats the question, this time in a pseudo-American accent, emphasising every word. The lady, clearly offended at this unusual humor replies "Yes." Click.

We move forward to the scene of way-side typically-American restaurant. We enter and, for the first time in my visit, John is *totally* silent.

"Smoking or non-smoking?" the lady asks. After a pause, I answer in my normal (Australian) voice. "Oh, it doesn't matter, I guess — either will do."

Instant recognition. You should see the effect! The lady purses her lips and squints at me. Needless to say, while the lunch service John receives is excellent, I am treated like one of Attila the Hun's prisoners!



By the end of the day, John still has not created a cartoon and that, after all, is a major point to my visit. A stroll from his house across the park to the local 'drug store' to pick up a six-pack of absolutely *dreadful* beer, then takes us past one of his inspiration spots — a babbling brook.

By the end of the day, the only cartoon I am privileged to see in creation is one of an Australian tourist, complete with camera around the neck and a look of bewilderment at the surroundings. Do I *really* look like that? (*No, mate. Worse, far worse. Ed.*)

John's studio consists of a drawing board, a fax machine and lots of knick-knacks around the room. A sawn-in-half toy Kangaroo, half in one room and half in the next, comes as a surprise, for example. The thing looks like it has just leapt at a hole in the wall and got stuck. Others include a toy clerk which whinges and whines when you hit it on the head with the (supplied) mallet and a cigarette-sized black box which swears a random swear when you push a button.

Around the walls are a series of newspaper cut-outs. These are *terribly* funny and rather rude from the perspective of the 'Australian' language although they weren't intended to be that way when they were printed back home. Until he returns to Australia around the end of this year, John is content to surround himself with some Australian memorabilia, too, to help resolve his homesickness.

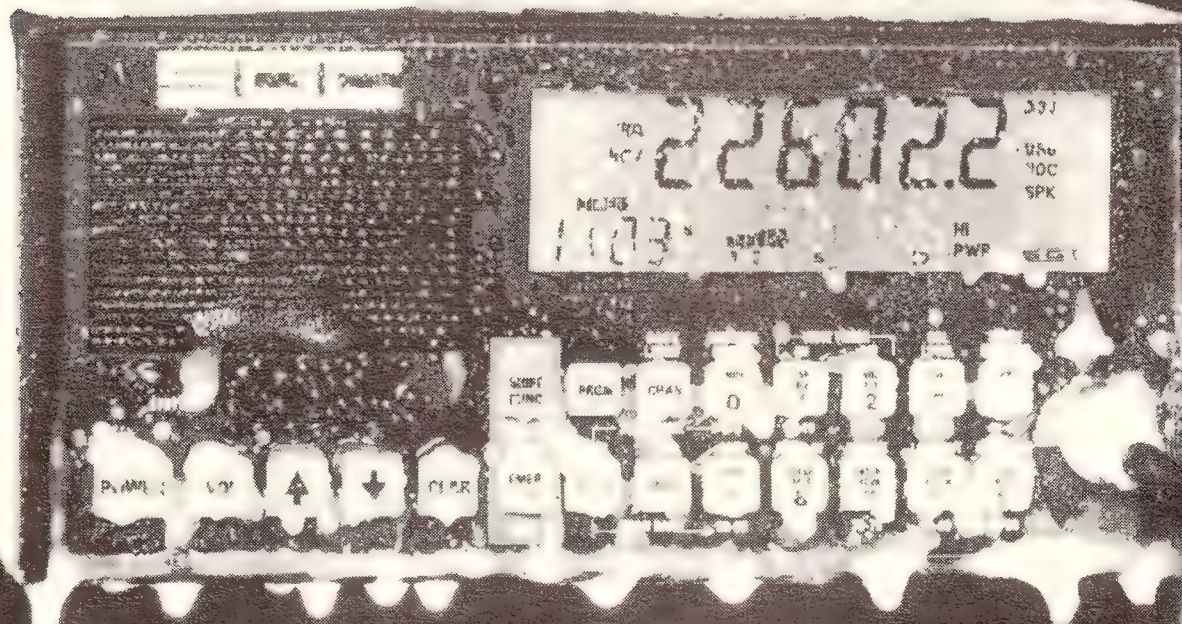
John's sense of humor is *completely* lost on the locals over there. His practical jokes and one-liners are in constant production, but are a total mystery to his friends and work-mates.

Keep up the good work, and keep us entertained over here John! Thanks for your hospitality, too. I certainly enjoyed my brief visit!

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CONSTRUCTION PROJECT

Home-brew RTTY modem ideas

Part 3. An anti-space module

By John Brennan, VK3BNE
Koroit, Victoria

As promised last time, this article, part three in a series on RTTY modem circuitry, covers the Anti-Space module.

To really appreciate what this little module does you really need to go back in time to the old loop supply-type teleprinters. When the loop current was switched on when receiving a continuous Mark tone the receiver solenoid was energised and the machine just sat there not typing anything, just like a car running in neutral awaiting the green light to jump into action. In this condition, the teleprinter was in what was called 'Mark Hold'.

However, once a steady Space tone was received, the receiver solenoid was no longer energised and the typing mechanism was allowed to rotate, which means the machine would 'Chatter', making a *hell* of a lot of noise. In this condition the teleprinter was what was called 'Running Open'.

Another big advantage is that the operator can leave the tape punch on during periods of RTTY activity, without wasting tape during periods of voice between the RTTY transmissions.

As you can see there is a decided convenience if the system can be made to respond to what is only a valid RTTY signal and ignore everything else.

There have been various anti-space circuits developed to work with the ETI-730. This one, designed by **David Clelland, VK7DC**, performs very well and is extremely simple to build. No adjustments are required, and all the components required can be found in most 'Junk Boxes' (we all have one!). Even if all the parts need to be bought new over the counter, the whole module should cost no more than about five dollars or so.

The performance of this circuit is very good with very little garble being printed, even when tuning across the voice segment of a very busy 20 metres. On FMI I have had no need for better performance, with the unit completely ignoring 90 per cent of all voice transmissions. I don't doubt the module could be fooled, though, but probably only by whistling a 2125 or 2295 Hz tone.

The input to the unit is fed from the Mark and Space tone filter CRO points. The connection of the unit interferes in no way with the operation of the CRO. The output of the unit connects via a switch to the base of Q1 on the ETI-730 demodulator board. The only time the unit needs to be switched out of circuit is when receiving an extremely weak signal, which will normally be only a marginal print anyway.

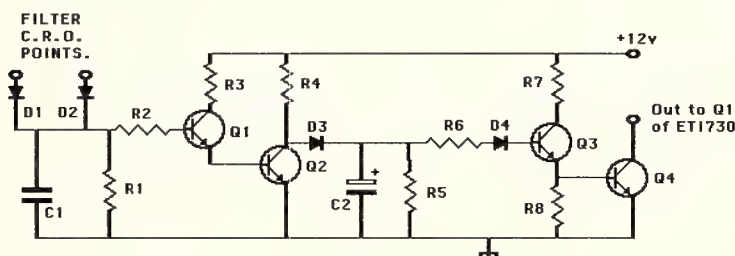
The unit is powered from the +12 Volt rail of the same supply used to supply the demodulator. The time delay can be altered if you wish to experiment by changing the value of the 47 μ F electrolytic capacitor.

Construction

The board may be built as either of the two displayed versions. The circuit for both versions is exactly the same.

The only difference is the addition of a 15-way edge connector on the 'B' board version. The connections of board 'B' are arranged in the middle of the edge connector with multiple earths at each end. This is provided to allow adaptation of any edge connector between a 6-way and a 15-way connector to be used by trimming the board to suit. The printed circuit board layouts are quite simple to follow. Pay particular attention that the transistors, diodes and the electrolytic capacitor are wired correctly.

Once built and installed, I'm sure you will agree this module is a very worthwhile addition to the ETI-730 RTTY demodulator.



Components

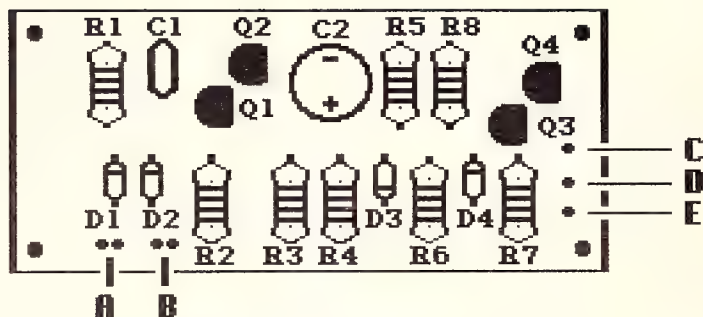
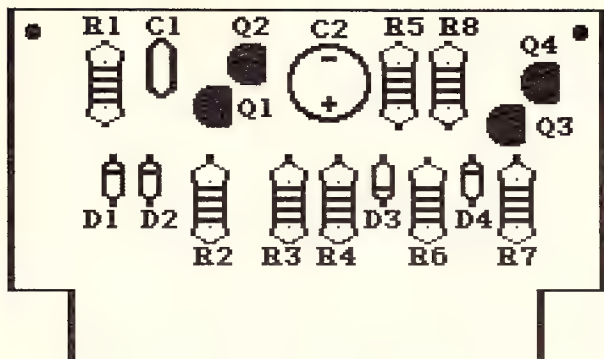
C1	.22 μ F greencap
C2	47 μ F, 25 volt electrolytic
D1-4	1N4148 or 1N914
Q1-4	BC548 or similar NPN transistor
R1	10K
R2	1K
R3	1K2
R4	6K8
R5	27K
R6	27K
R7	10K
R8	1K

All resistors 1/4 or 1/2 watt

Another annoying condition arises when tuning across a busy band, or where there is both RTTY and voice activity on the same frequency, which will cause 'Garble' to be intermittently printed on the machine.

The elimination of this condition is the biggest advantage of the unit with today's 'Sagem' teleprinters and computer terminals.

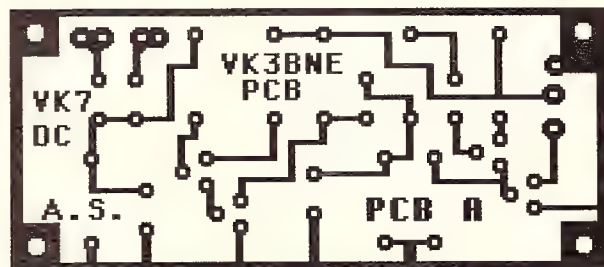
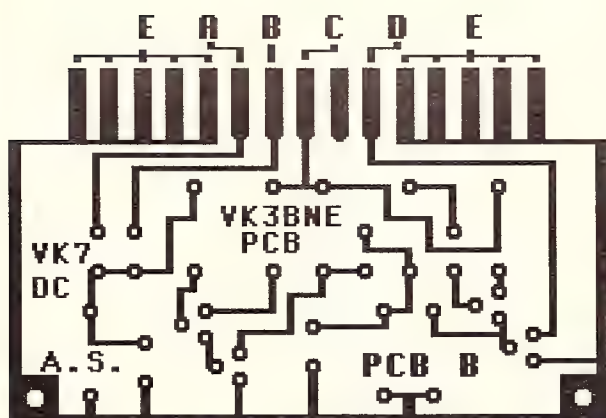
With the computer terminal the unit will prevent 'Garble' being received on the monitor, but the teleprinter operator receives a big plus — the saving of telex roll paper, as it is getting expensive and, in some areas, hard to obtain.



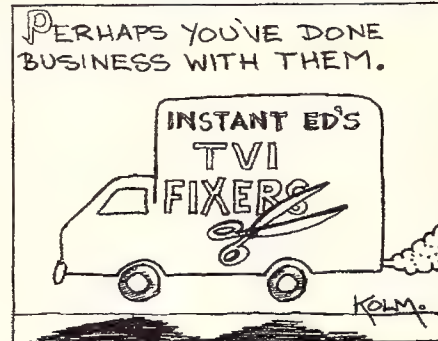
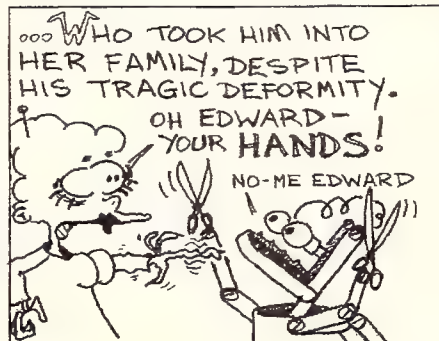
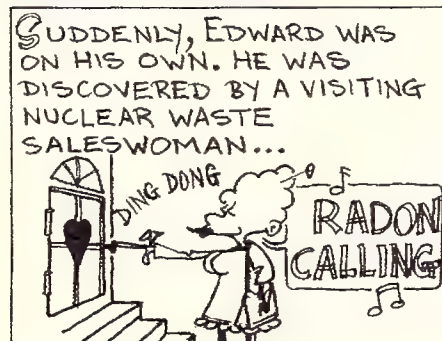
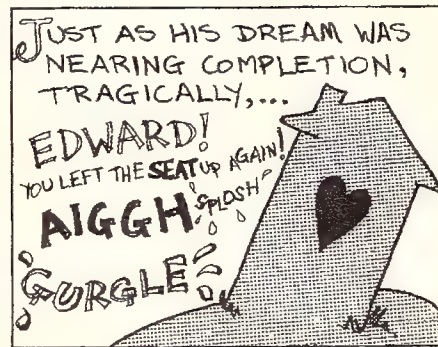
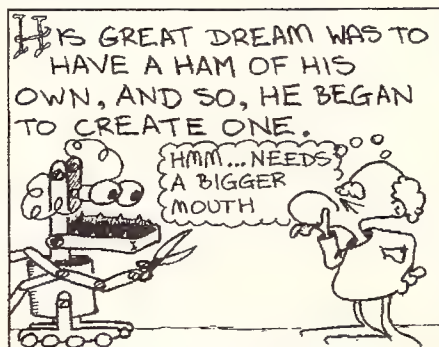
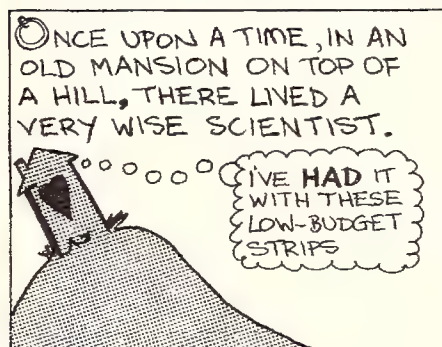
PCB connections

- A to MARK filter CRO point
- B to SPACE filter CRO point
- C to base of Q1 on ETI-730 demodulator
- D to 12VDC supply
- E earth

ACTUAL SIZE ARTWORK



HEROES OF HAM RADIO #69. EDWARD SCISSORHAM





Editor's note: our former contest columnist, **Geoff Hudson, VK3VR**, has finally given in to his increased workload, and is replaced this month by **James Spenceley, VK2AUP**. Thanks, Geoff, for your efforts with the column, and good luck for the future.

Contest Diary

- Mar 28-29** CQ WPX Phone test
(Rules this issue)
- Apr 4-5** SP DX CW test
(1500z for 32 hrs)
- Apr 18-19** ARI DX CW test
(2000z for 24 hrs)
- Apr 25-26** Helvetia Contest
(Rules this issue)

Coming up...

10-10 CW Test
CQ M (Peace to the world) Contest
Volta RTTY Test
CQ WPX CW Test

This month we introduce a 'Hints' segment where the more-experienced contesters can write in with helpful hints and tips for contests and contesting in general. I would encourage you to write, both for this segment and to use the column as a platform to express your views on specific rules, on how to improve contests and the standards of Australian contesting, and more.

I'd also like to hear about your scores: please share your scores for anything

from the CQ WW to the John Moyle with us!

But before we go much further, who is VK2AUP? Although I've been involved in contesting for only a few years, I've competing in the major contests as well as the local VK contests. My latest obsession is with Single op/Single Band contests, especially the 'All Asia', 'ARRL 10M' and the 'CQ WPX' as well as the 'RD', 'VK/ZL/O' and the 'Phone/CW Sprints'. Enough of that — let's proceed:

I'd be keen to hear from those of you who competed in the ARRL International DX — how do you think it went? Your comments and claimed scores would be appreciated to the address at the top of the page.

Next on the contest scene is my personal favorite — the **CQ WPX**. We've included the *CQ Magazine* official Log and Check sheet have been included for your benefit. They are very useful, and save time for the staff of CQ staff if used. Hopefully this will become a regular event in the column.

CQ World-wide WPX

Possibly the highlight of the contesting year, this year's **CQ WPX** marks the 36th time this annual event has run, and anyone who has taken part in it will know why it is so popular. There are many DX countries available, and possible the largest number of stations on any given HF band at any time throughout the year. It's time to start preparing *now* if you want to play a major part in the contest!

Aim: For amateurs around the world to work as many other amateurs as possible in the time allotted.

Date/Time: Starts 0000z Saturday March 28, ends 2400z Sunday March 29, 1992

Bands: 160/80/40/20/15 and 10 metres (no WARC bands)

Categories: A) Single op single band, all bands. (All operating to be

done by one person (including logging and spotting) therefore the use of DX spotting nets is not permitted. Single op station can operate for a maximum of 36 hours, and 'off' periods must be a minimum of 60 minutes and clearly marked as such in the log.)

B) Low Power (Same as category 'A' above, except the transmitter power shall not exceed 100 watts. Low power stations are to compete with other low power stations only.)

C) QRP power (Same as category 'B' above, except the transmitter power shall not exceed five watts.)

D) Multi op, all band, single transmitter, multi-transmitter. (Single transmitter stations must remain on a band at least 10 minutes after a contact is made. Multi-transmitter stations may have only one signal and running station per band, with all transmitters located within a 500 metre diameter or within property limits of the station licensee's address. All antennas must be connected by wires to the transmitters and receivers.)

Exchange: RS(T) report plus a progressive three-digit contact number starting with 001 continuing to four digits if past 999. Multi-transmitter stations use separate numbers for each band.

QSO points: Contacts with stations on different continents are worth three points on 14, 21 and 28 MHz and six points on 7, 3.5 and 1.8 MHz. Contacts with stations on the same continent but in different countries are worth one point on 14, 21 and 28 MHz and two points on 7, 3.5, 1.8 MHz. Contacts with stations in the same country are permitted for multiplier purposes but count for zero QSO points.

Multiplier: The multiplier is the number of different prefixes worked. A prefix is counted once no matter how many times it is worked on different bands. The prefix is the letter and nu-

Scores

Just to hand are the result of the 1991 RSGB Commonwealth Contest. Here are the top five VK results:

Call	Position	Total	80m	40m	20m	15m	10m
VK6LW*	5	6139	645	875	2140	1315	1164
VK2APK*	6	5235	545	810	1820	1435	625
VK2BJ	7	5155	600	730	1820	1170	935
VK4XA*	11	4530	325	515	1820	1005	865
VK5GZ*	15	3515	410	390	1595	700	420

* Receive Certificates for highest scorer in their state.

Compiled by James Spenceley, VK2AUP

5 Muraban Place, Belrose, New South Wales 2085

meral combination at the beginning of the callsign (eg. W6, W7, N7, JH1, JA1 etc). Any change in the numbering or lettering constitutes a new prefix. In the case of a station operating portable, the portable designator then becomes the prefix e.g. K2YOU/W6, with W6 being the prefix, not K2.

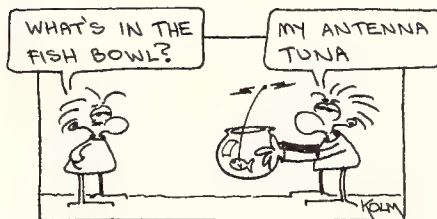
Final Score: Total QSO points times the number of prefixes. A station may be worked once on each band, however prefix credit can be taken only once regardless of the number of different bands on which the same station/prefix has been worked during the contest.

Awards: Separate awards will be given to the highest-scoring stations in each country and each call area of the USA, Canada, Australia and Asiatic USSR for the following sections: QRP, Low Power, Single op single and all band, multi single and multi. All scores will be published provided single ops clock up more than 12 hours or 24 hours for multis.

Logs: All times must be in UTC (z), and all breaks must be clearly shown.

Submission: The address to post your entry to is:

CQ WPX Contest,
CQ Magazine,
76 North Broadway,
Hicksville,
New York 11801,
USA.



Helvetia Contest '92

Date/Time: Contest begins April 29 at 1300z and concludes at 1300z on April 30, 1992.

Bands: All HF bands except for the WARC bands.

Categories: Mixed-mode only: Single Op, Multi Op, all bands.

Exchange: DX (VK) exchange RS(T) plus serial number. HB stations will add a two letter 'Canton' (locality) designator.

QSO Points: Three points per contact. Stations can be worked only once

per band (either CW or SSB but not both).

Multipliers: Each Canton counts for one multiplier.

(There are 26 cantons, which you may work once per band for a total of 130 multipliers.)

Scoring: QSO points X the number of Cantons worked on all bands.

Awards: Awards will be issued to highest scorers in each country.

Logs: Use a separate log for each band. Logs to mailed to:
Walter Schmutz, HB9AGA,
Gantrischweg 1,
CH-3114 Oberwiltach,
Switzerland.

Helvetia Award: If you work all 26 Cantons you also qualify (upon specific request) for the Helvetia Award. Send contest log extracts to:
Kurt Bindschedler, HB9MX,
Strahleggweg 28,
CH-8400 Winterthur,
Switzerland.

Hints and Tips

Well, this is the first Hints and Tips Box and to start the ball rolling we have some comments from **Deitmar, VK2APK:**

- Do not repeat *anything* unless asked, as this wastes time — in a contest, time is *contacts*;

- It's very important to stick to international phonetics; they are there for a reason;

- 95 per cent of people don't know how to put out an effective CQ Call. Too long and people will pass you by, but too short and they will tune right across you, although a simple 'CQ Contest VK.....' should do in the busier times. Listen for a short period of two or three seconds before calling again. People will become accustomed to your operating in no time at all, and once you have found an operating system you like (and which works!) stick to it.

This is advice from a person who has been in over 300 major contests and has won a number of them, so it's from someone who *knows*...

If you would like to get some advice on operating techniques, on operating in certain contests, or feel you can contribute something for new contesters, please write to the address at the top of the page.

73 and Good Hunting de James, VK2AUP.

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When reviewing last month's column and the simple equipment that we then used for fox hunting, I started to wonder how many potential hunters, whether licensed amateurs or SWLs, are scared away from participating in events because of the cost and complexity of the equipment which they assume is required in order to be competitive.

After some careful research (which lasted two days and umpteen cans of Coke) I decided that maybe the simplest — and least expensive — method for effective VHF/UHF fox hunting would probably be two phased vertical quarter-wave whips spaced one quarter of a wavelength apart and fed 90° out-of-phase. This combination of phasing and spacing will produce a cardioid radiation pattern (see **fig 1**) with a very pronounced null. In use, the antenna is rotated until the null is detected in the received signal. The null

indicates in which direction the transmitter is located. Another advantage is that, unlike some other RDF systems, this antenna can be used on FM, SSB or AM hunts.

Construction

Shopping List

- two BNC or SO239 sockets — whichever you prefer to use
- five BNC or PL259 plugs — to match those used above
- one BNC or UHF T-Junction — again, matching the above plugs
- one 1.5 metre welding rod — sized to fit the connectors being used
- 1.8 metres of RG59U coax — well shielded, polyethylene dielectric
- RG58 coax — sufficient to reach from the antenna to the radio
- two metres plastic conduit of 12 mm diameter — used for support
- one T-piece to fit above conduit
- two 50 mm square pieces of printed circuit board.

The first step is to make a hole in the center of the two pieces of PCB big enough to take the sockets you have elected to use. Insert the sockets in a manner which leaves the copper nearest the threaded end. Solder a 482 mm piece of welding rod into each socket at the point where you would normally solder the inner conductor of coax.

Place the conduit's T-piece onto one end of the plastic conduit, and measure

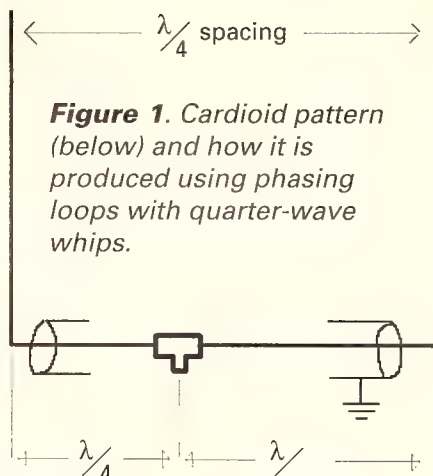
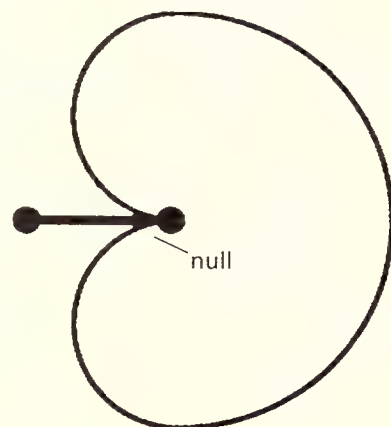


Figure 1. Cardioid pattern (below) and how it is produced using phasing loops with quarter-wave whips.



107 mm from the end of the T-piece (the one the conduit is inserted into) and cut the conduit at this point. Insert a piece of conduit of the same size into the other end of the T-piece. This forms the arms which support the antennas at the correct spacing. The outer ends of this may be slotted so that the PCBs can be inserted and later glued in with the antennas spaced 482 mm apart.

Cut a piece of RG59 coax to 319 mm and install one of the plugs onto it. Feed the coax through one of the small pieces of conduit and plug into one arm of the coax T. Install the second plug on the cable so that the *total* length of cable, half of the T connector's arm, and plugs is 317 mm (an electrical quarter wavelength on two metres). Cut a second piece of RG59 to 638 mm and repeat the above procedure with the second small section of conduit. This time, the length of cable, plugs, and half of the T should be 634 mm (a half-wave). This assembly forms the

VK2TSC

7 LEPTON PDE, BELMONT NORTH 2280 N.S.W.

SIMON

TO

DATE

TIME

UR SIGNAL

LOCATION

EQUIPMENT

ANTENNA

Compiled by Simon Clowes, VK2TSC

7 Lepton Parade, Jewels, New South Wales 2280

phasing harness used to produce the cardioid pattern.

Feed the RG58 coax through a piece of conduit about one metre in length and terminate it with a plug. Connect this to the stem of the T connector and glue the conduit into the base of the conduit T-piece. Terminate the coax with a plug which matches the connector on the radio you intend to use for hunting.

Insert the PCB/antenna assemblies into the slots in the conduit cross-pieces. Carefully measure and ensure that the spacing is 482 mm and that they are equally-spaced from the center line of the T-piece. Do not glue this last stage at this time. Leave the completed assembly aside until all glue is thoroughly dried.

Tuning

The dimensions given should bring the system to peak effect at 146 MHz although they can obviously be adjusted to other areas of the two metre band.

Using a constant signal source of a known location and of a frequency near to that used for the hunts, we can now adjust the length of the elements and the spacing between them in order to produce the deepest notch possible. Make changes of less than 5 mm at a time, and if you need to adjust the phasing harness make sure that the longer section is *twice* the length of the other one.

Once you have a deep null, glue or bolt everything together and make a mark using a method which is visible at night as well as day to indicate which end points at the transmitter when the null or 'notch' is aimed at the transmitter.

Oh, and as it helps if you know which way to tell the driver... note that the notch will be at the end which has the antenna connected to the electrical quarter wave of coax.

As I said earlier, this project is simple and cheap to build, and I know that they have been used to win hunts at places like Urunga and Mt Gambier...

A perturbing thought...

How many of you out there wish you could get in some extra practice at fox hunting? There may be a way to do so and, at the same time, do a service for your community.

A few weekends ago, I was on radio watch for a local volunteer water rescue organisation (**RVCP**) when two of the emergency channels became jammed — one by accident (a sat-on mic), while the other was deliberately interfered with. It would have been nice to have had a couple of bearings which we could have plotted on a chart so that an approximate location could have been handed on to the authorities...

Another possibility is for a vessel in which the skipper just doesn't know his or her location. Again, two or more bearings would prove an advantage. So there is a suggestion: contact the local rescue unit (land or water) and they may very well welcome your expertise at what most of us consider a sport.



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AMATEUR RADIO THEORY

1992 AOCPP Theory Course

Part three

By Paul Butler, VK3DBP
Brighton, Victoria

It's straight into the action this month, with an in-depth look at **semiconductors**. Our aim is to cover the AOCPP course in 12 months, so we have to keep moving. Remember, you will have to read other references to get the whole picture, so make sure you keep up to date with your homework! We'll finish up this month with a short test to check your knowledge from the first two parts of this course. We've thrown in a few extra questions which you should know about from the Novice course, too, just to keep you on your toes. The answers are elsewhere in this issue; next month, we'll give a full explanation for each question. So, off we go...

Semiconductor materials conduct electricity, but not in the same way as metals. A pure semiconductor, typically germanium or silicon, conducts hardly at all, because there are so few free charges (electrons) able to move through the material. The introduction of an impurity (dope) such as arsenic or antimony, with its radically different atomic structure, changes the situation by increasing the number of free electrons and so increasing the conductivity. A semiconductor doped in this way is called **n-type**. If, instead, a dope such as aluminium, gallium or indium is introduced into the regular atomic structure of a pure semiconductor, the result is a deficiency of electrons, known as holes. Semiconductor materials which conduct because of the presence of holes is known as **p-type**.

A **p-n** junction can be constructed at the boundary between n-type and p-type semiconductor materials. Electrons and holes combine in the region around the junction itself and it is this barrier region, and its response to applied voltages, which determines the properties of the p-n junction.

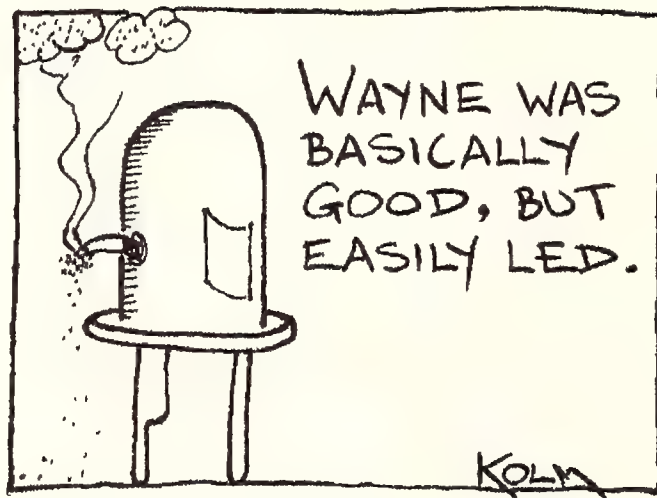
Imagine a p-n junction connected to a battery so that the n-type material is connected to the negative terminal and the p-type to the positive terminal. Electrons are attracted across the junction from the n-type into the p-type and on into the battery, while holes migrate in the other direction. The barrier region *contracts* and the p-n junction *conducts*.

If the battery is reversed, however, the electrons and holes move away from the junction, leaving an enlarged barrier region devoid of free charges. The p-n junction cannot now conduct — it acts as a rectifier or **diode**, a device which conducts in one direction only and which can be used to convert AC into DC (a power diode) or detect the information carried by an amplitude-modulated (AM) radio signal (a signal diode).

When a semiconductor diode conducts, there is a voltage drop across it. The value of this voltage is typically 0.3 V for a germanium diode, and 0.7 V for a silicon diode. When a reverse voltage is applied, a small reverse leakage current will flow. Another semiconductor material used in the construction of diodes — selenium — has the character-

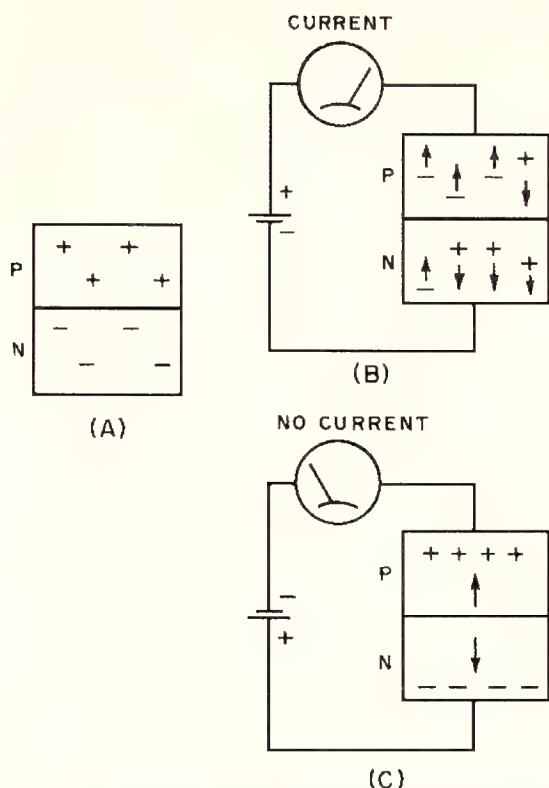
istics of higher forward voltage drop and high reverse leakage current. These and other undesirable properties have led to the replacement of selenium devices by their silicon equivalents.

The barrier region in a semiconductor diode acts like a capacitor and, because it is so small, the capacitance is high enough to limit the operation of the device at high frequencies. The capacitance can be reduced by making the contact area very small, as in a point-contact diode in which a small area of p-type semiconductor is placed under the point contact embedded in a larger mass of n-type material. For this reason, point-contact diodes find many applications in radio-frequency (RF) circuits.

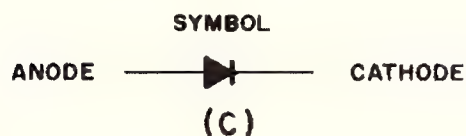
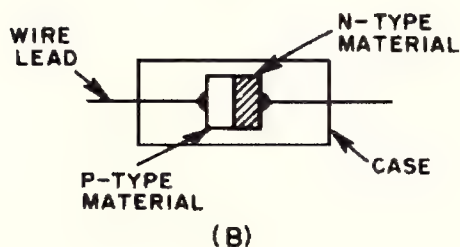
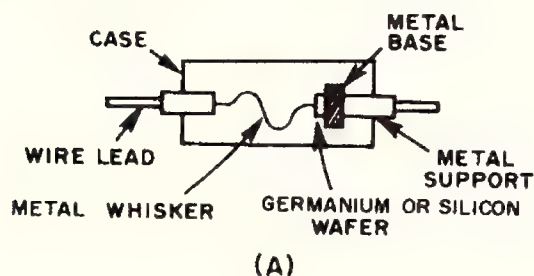


Silicon junction diodes can perform well in high power applications, more so than point-contact diodes. A peak-inverse-voltage (**PIV**) of 1000 V or more can readily be tolerated and many power diodes can carry currents of 100 A or more. As long as the manufacturer's specifications are not exceeded, a diode can perform well without damage, as long as the operating temperature is kept down and the heat generated conducted away by the liberal use of heat sinks.

Diodes can perform other specialist functions, too. The zener diode is used 'backwards' in a circuit, i.e. a reverse polarity voltage is applied which is high enough to cause the junction to break down. The breakdown voltage is known as the **Zener** voltage and can be used as a reference voltage, typically between 2 and 200 V. As well as being used to establish reference voltages, zener diodes can be used as voltage regulators, to provide a near-constant DC voltage from a power supply even when the input voltage or load resistance changes.



A PN junction (A) and its behavior when conducting (B) and non-conducting (C).



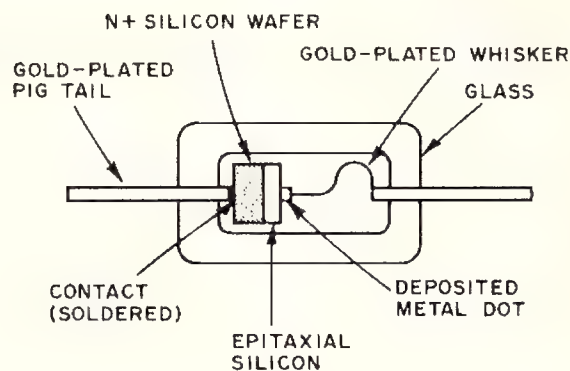
A point-contact type of diode is shown at A. A junction diode is depicted at B, and the diode symbol is at C. The cathode end is usually indicated by a band on the body of the device.

Because the size of the barrier region is dependent on the voltage applied to a diode junction, the junction capacitance depends on voltage, too. This property is made use of in varicap (variable capacitance) or varactor (variable reactance) diodes. Typical varicaps cover capacitance range from a few picofarads to in excess of 100 pF and can operate into the microwave region. Two common applications of varicaps are in RF tuning circuits, in which an externally applied voltage determines the capacitance and therefore the resonant frequency of the circuit, and in frequency multiplier circuits to double or triple (or more) the frequency of the output from an RF oscillator.

The **hot carrier diode** relies on high-mobility electrons in n-type material for its operation, and is used in mixer and detector circuits at very high frequencies (VHF) and higher. It is mechanically superior to a conventional diode, producing less noise, a lower capacitance and reduced sensitivity to temperature variations.

The silicon controlled rectifier (**SCR**) is a four-layer semiconductor device, either PNP or NPNP. It is triggered into conduction by a pulse on the gate input. Once triggered, it will remain 'latched' and will conduct until the externally applied voltage drops to zero. It is used in power supply applications to prevent damage from excessive current flow and in electronic ignition systems. Two SCRs packaged together with a common gate electrode form a **triac**, which can be used to switch AC, as in a lighting dimmer.

The last diode to consider is the light emitting diode (**LED**). This PN junction, made from gallium arsenide (GaAs), gallium phosphide (GaP) or a combination (GaAsP) (*GASP! Ed.*), emits light when forward biased. Low current drain, long life, small size and choice of colors (red, green, yellow and blue) make the LED a popular choice as a panel lamp or as part of a digital display. A current of 10 to 20 mA results from an applied voltage of 1.5 to 2 V.



Cross-sectional representation of a hot-carrier diode (HCD).

Okay, now it's time to check your understanding of the subjects we've dealt with to date. What follows is a number of questions relating to the topics we've covered so far. Each month we'll be asking you a number of questions. We're not *too* mean, though — you'll find the answers at the end of the column, but do yourself a favor and try not to look at them until you've finished the test. You can expect questions like these in your *real* test...

Allow yourself 15 minutes for these questions. If you haven't arrived at the correct answers by then, go back through the course notes, or look at the answers.

1. A capacitance of 0.025 microfarad is the same as:

- (a) 25 picofarads
- (b) 250 picofarads
- (c) 2500 picofarads
- (d) 25,000 picofarads

2. When 100 volts is applied across ten 50 ohm resistors in parallel the current through each resistor equals:

- (a) 2 ampères
- (b) 10 ampères
- (c) 20 ampères
- (d) 100 ampères

3. The 'beta' of a transistor is the:

- (a) noise figure
- (b) current gain
- (c) operating speed
- (d) breakdown voltage

4. A diode vacuum tube will:

- (a) amplify an AC signal
- (b) rectify an AC signal
- (c) operate only when a negative voltage is applied to the anode
- (d) conduct only when a positive voltage is applied to the cathode

5. Cross-modulation interference in a superheterodyne receiver is usually due to:

- (a) rectification in an RF stage
- (b) parasitic oscillation
- (c) excessive gain in the RF stages
- (d) degeneration in the IF stages

6. Absorption of RF ground wave energy increases:

- (a) over dry sandy soil
- (b) with vertical polarisation
- (c) with decreased frequency
- (d) over sea water

7. The ionospheric layer which is furthest from the earth during the day is:

- (a) F1
- (b) F2
- (c) E
- (d) D

8. The ionospheric layer which is primarily instrumental in allowing very long distance (DX) communications on the 1.8 MHz band at night is:

- (a) D
- (b) Sporadic-E
- (c) F
- (d) E

9. Electromagnetic waves are refracted when they:

- (a) pass through atmospheric layers of different densities
- (b) meet the earth's surface
- (c) encounter a perfectly-conducting surface
- (d) encounter the edge of a sharp object

10. The main reason for earthing mains-powered equipment is to:

- (a) reduce RF interference
- (b) reduce eddy currents
- (c) reduce shock hazards
- (d) reduce stray coupling

11. The standard color code used to identify the active conductor of a flexible 3-core AC power cord is:

- (a) green
- (b) yellow
- (c) brown
- (d) blue

12. The value and tolerance of a resistor whose color code bands from left to right are yellow, violet, orange, silver, is:

- (a) 740 ohms ± 5 per cent
- (b) 4700 ohms ± 10 per cent
- (c) 7400 ohms ± 1 per cent
- (d) 47,000 ohms ± 10 per cent

13. A capacitance of 22 nanofarads is the same as:

- (a) 220 picofarads
- (b) 2200 picofarads
- (c) 22,000 picofarads
- (d) 220,000 picofarads

14. The ionospheric layers which are responsible for long distance radiocommunications are the:

- (a) A and B layers
- (b) A1 and A2 layers
- (c) E and F layers
- (d) C and D layers

15. The optimum working frequency is approximately:

- (a) 15 per cent less than the MUF
- (b) 30 per cent less than the MUF
- (c) 15 per cent greater than the MUF
- (d) 30 per cent greater than the MUF

16. Temperature inversion occurs in the:

- (a) stratosphere
- (b) troposphere
- (c) ionosphere
- (d) hemisphere

Here are the answers:

1 (d), 2 (a), 3 (b), 4 (b), 5 (a), 6 (a), 7 (b), 8 (c), 9 (a), 10 (c), 11 (c), 12 (d), 13 (c), 14 (c), 15 (a), 16 (b)

MORE FEATURES FOR YOUR MONEY!

FT-411E 2m HANDHELD

Superb performance on the 2m band. Top of the line features, reliability and value for money from the name you can trust... Yaesu. Only the compact FT-411E offers these standard features...

- 144 to 148MHz transceive operation, with enhanced receiver performance
- Ultra long life 1000mAh 7.2V NiCad battery pack
- 2.5 watts RF output as standard, 5 watts with 12V DC (or optional FNB-11 NiCad)
- Better than 0.16uV (12dB SINAD) sensitivity
- Programmable power saver for extended operating periods
- Keypad or dial frequency entry, with selectable tuning rates
- 49 tuneable memories which store repeater offsets
- Band, memory, priority or limited-band scanning
- Just 55 x 155 x 32mm
- Carry case, belt clip, carry strap and approved AC charger
- **Now with enhanced receiver sensitivity and improved strong signal handling!**

Cat D-3350

2 Year Warranty

\$479



Hurry, prices rise in April.

Buy now & save.

FT-212RH MOBILE 2m FM TRANSCEIVER

The FT-212RH is an ideal mobile FM transceiver that also doubles as an easy to use base station. With 45 watt output over the 144-148MHz range, rugged diecast chassis (for superb RF isolation) and extensive use of surface mount components.

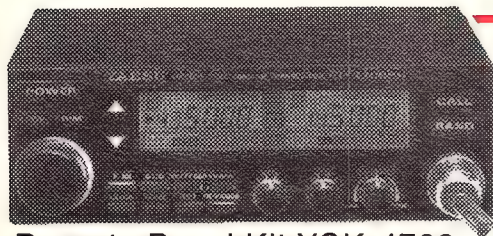
What's more, it has a large back-lit LCD with a bargraph PO/S-meter, 5 selectable tuning steps and a total of 21 memories (18 general purpose, 1 call channel and 2 sub-band limit memories for band scanning). As well, there's inbuilt C.T.C.S.S. encode and a variety of scanning functions. Complete with mobile mounting bracket, MH-14A8 microphone and DC power lead.

Cat D-3494



2 Year Warranty

\$499



Remote Panel Kit YSK-4700

Cat D-3301

\$59⁹⁵

FT-4700RH MOBILE 2m/70cm FM TRANSCEIVER

Check this out for fantastic value! With full-duplex or dual-band operation, remote mountable front panel option and 50W output (2m) & 40W output (70cm). It also has full 2m and 70cm frequency and signal strength displays, back-lit controls and an inbuilt cooling fan. To top it off, you get 20 memories, 5 selectable tuning steps and a number of scanning selections. Complete with microphone and mounting bracket.

Cat D-3300

2 Year Warranty

\$899

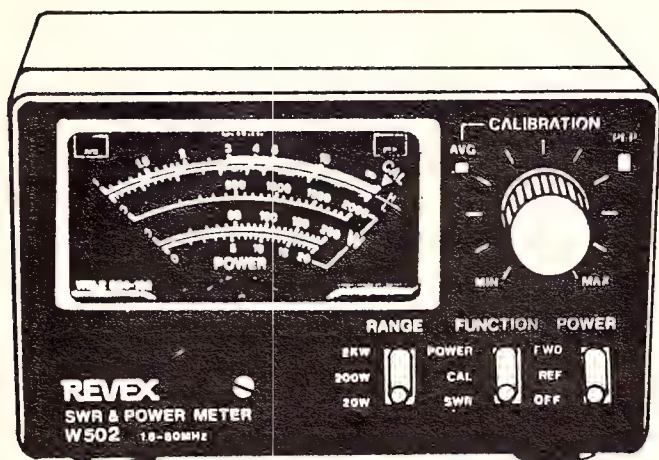
B1307/BK

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DICK SMITH
ELECTRONICS

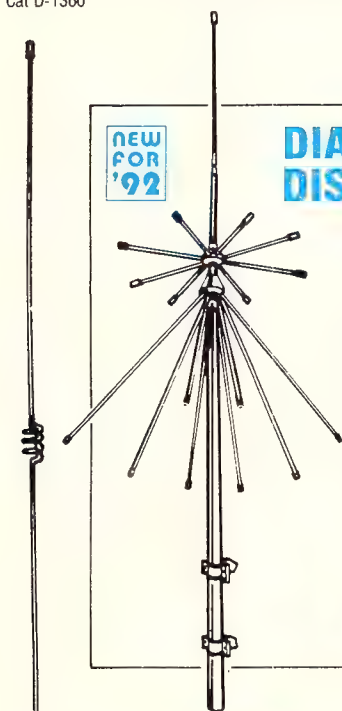


HF/6m POWER/SWR METER

A superb wideband SWR/Power meter which boasts quality Japanese construction and a truly accurate P.E.P. metering circuit (unlike many 'other' so called P.E.P. monitor systems). The Revex W502 features solid construction with an all-metal case and a large back-lit meter... and it covers the 1.8 to 60MHz range with less than 0.1dB insertion loss. With 20W, 200W and 2kW power ranges and LED indicators which show average or P.E.P. operation. Requires 13.8V DC @ 200mA power supply.

Cat D-1360

\$199



NEW
FOR
'92

DIAMOND D-130J DISCONE ANTENNA

This quality Japanese disccone antenna covers the frequency range 25-1300MHz, and was designed to be easy to assemble and install. The extensive use of stainless steel in the D-130J makes it very durable, while allowing transmission on the 6m, 2m, 70cm, and 23cm bands with a maximum power rating of 200W PEP. Comes complete with mast mounting hardware and instructions.

Cat D-4840



\$169

ST-7500 DUALBAND MOBILE ANTENNA

NEW
FOR
'92

At last, a high performance dualband mobile antenna at a down to earth price. The ST-7500 is just 1metre long and uses a ground independant design to provide high gain (3dB on 2m, 5.5dB on 70cm) with a maximum power rating of 150W. Quality Japanese construction together with a tiltable whip structure make this an ideal antenna for the discerning mobile operator. Requires SO-239 antenna base (D-4035 recommended).

Cat D-4810

\$79⁹⁵

DIAMOND VHF/UHF BASE STATION ANTENNAS

These high quality, vertically polarised base station antennas are ideal for the discerning Amateur operating on the 2m, 70cm or 23cm bands. They're beautifully constructed Diamond brand antennas from Japan which provide high gain for maximum range. Constructed from robust F.R.P. tubing for excellent all-weather operation, with ground-plane radials for a clean radiation pattern.

2m ANTENNA F-23A

Frequency: 144 — 148MHz
Gain: 7.8dB
Max. Power: 200W
Max. Wind Speed: 144km/h
Length: 4.53m
Type: 3 x $\frac{5}{8}$ λ co-linear
Cat D-4850



\$199

2m/70cm ANTENNA X-200A

Frequency: 144 — 148MHz, 430 — 450MHz
Gain: 6dB on 2m, 8dB on 70cm
Max. Power: 200W
Max. Wind Speed: 180km/h
Length: 2.5m
Type: 2 x $\frac{5}{8}$ λ (2m), 4 x $\frac{5}{8}$ λ (70cm)
Cat D-4860

\$199

2m/70cm ANTENNA X-500A

Frequency: 144-148MHz, 432-450MHz
Gain: 8.3dB on 2m, 11.7dB on 70cm
Max. Power: 200W
Max. Wind Speed: 144km/h
Length: 5.2m
Type: 3 x $\frac{5}{8}$ λ (2m), 8 x $\frac{5}{8}$ λ (70cm)
Connector: N-type socket
Cat D-4865

\$299

Limited Stocks!

23cm ANTENNA F-1230A

Frequency: 1260 — 1300MHz
Gain: 13.5dBi
Max. Power: 100W
Max. Wind Speed: 144km/h
Length: 3.06m
Type: 25 x $\frac{1}{2}$ λ co-linear
Connector: N-type socket
Cat D-4870

\$239

Limited Stocks!

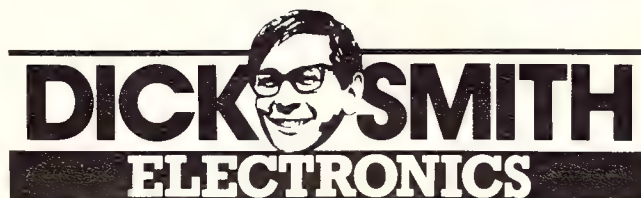
2m $\frac{1}{2}$ WAVE BASE STATION ANTENNA

—MOBILE ONE

An outstanding value for money, compact, Australian made base station antenna which is only 1.69m long. It uses a single section F.R.P. radome for excellent all-weather operation and covers 144-148MHz with less than 1.5:1 SWR. The antenna provides approximately 3dB gain with a maximum power handling of 200W FM. It's fitted with an SO-239 socket mounted into the base for easy coax connection and comes with a 5 year warranty.

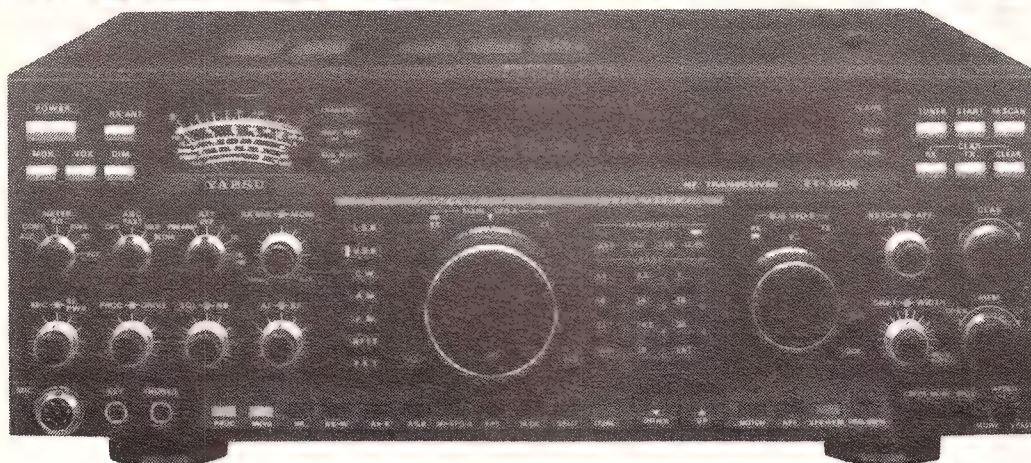
Cat D-4820

\$49⁹⁵



B1297/LB

EX-DEMO CLEARANCE YAESU FT-1000



Now's your chance to get the 'Best of the Best' at a bargain price! Right now you can pick up an ex-demo FT-1000 deluxe HF all-mode transceiver and save a fortune. Here's what the experts have to say about this incredible transceiver...

On Operation

"The layout of the front panel of the FT-1000 is just right... I reckon the FT-1000 is (operationally) far less complex than either the Icom IC-781 or the Kenwood TS-950S." -ARA

"I found the FT-1000 easier to learn and use than any other radio in its class." -QST

On Documentation

"clearly written and complete, and includes a complete set of schematics and many high quality photos" - QST

"The quality of printing and presentation of this book is the best I have seen..." -AR

On the Receiver

"... this rig has a very strong receiver; it has the best overall performance (in terms of sensitivity and dynamic range) and the highest third order input intercept of any commercial radio ever tested in the ARRL lab." -QST

"The direct digital synthesizer works very well and produces receiver performance that sets new standards." -AR

"I found the receiver in the FT-1000 to be astonishingly sensitive and immune to cross modulation..." -ARA

Transmitter - SSB

"the FT-1000 is easy to adjust and use.... The processor adds quite a bit of punch to SSB signals; hams I worked on SSB with the FT-1000 gave me good audio quality reports" -QST

"Reports were all very favourable, especially when using the speech processor." -AR

Transmitter - CW

"CW keying was a delight...power output was checked in the CW mode and found to be well in excess of 200 watts on all bands..." -AR

"On CW the FT-1000 was absolutely faultless." -ARA

"CW operation with the internal keyer is a breeze..." -QST.

Transmitter - RTTY/Packet

"Using the set on HF packet was an absolute pleasure..." -PW

"Packet and RTTY modes were tried and proved just superb." -ARA

Conclusion

"...the FT-1000 represents unbelievable value..." -AR

"It's an excellent set worthy of accolades and rave." -ARA

"...the FT-1000 needs little for me to consider it the ultimate contesting and DXing machine available today..." -QST

The FT-1000's combination of Direct Digital Synthesis, high output power, ultra-high performance receiver and easy to use controls put it far ahead of the competition. Hurry in today and check out our limited number of ex-demo models all with a full 2 year warranty. Wouldn't you rather be using the "Best of the Best?"

2 Year Warranty

Cat D-3200

\$4295 **SAVE \$700**

(ex-demo models only)
Includes MD-1 desk mic

Ex demo units are available only at our York St, Nth Ryde, Chermide, Brisbane City, Springvale, Coburg, Bourke St, Adelaide City and Perth City stores.

Magazines

ARA - Amateur Radio Action Vol.13, No.2

AR - Amateur Radio August 1990

P.W. - Practical Wireless January 1990

QST - ARRL QST March 1991 *(review with optional filters fitted)

Copies of our 12 page colour brochure are available upon request.

Phone (008)226610 or (02) 8882105

Some models may be shop soiled. However all come with a full 2 year warranty.



B1307/2

The Tradition Continues...

FT-990HF ALL-MODE TRANSCEIVER

Take a quick look at the all-new FT-990 and you'll soon see the similarity to the top-of-the-line FT-1000... and for good reason. The incredible FT-990 embodies many of the advanced features and ease of operation of the FT-1000. But in a more compact, economical package that sports several new advances in both transmitter and receiver design.

Cat D-3260

\$3295



Designed For Easy Operation

Just like the FT-1000, Yaesu have designed the FT-990 to be as easy as possible to operate. The front panel layout puts all frequently used controls right where they should be... at your fingertips. All controls are clearly labelled and the digital display provides an abundance of information in an uncluttered and easy to read format. The front panel keypad offers one-touch band selection (160m - 10m) with 2 independent VFOs per band and 90 memories that store the operating data held in both VFOs. You can't help but appreciate the large back-lit analogue meter rather than those confusing bar-graph meters found on other transceivers.

Unique Features

- Customizable RF Speech Processor - Yaesu's unique Frequency Shifted Processor (FSP) lets you shift the IF passband of your transmitted SSB signal to provide maximum punch with your voice/microphone combination.
- Digital Audio Filtering - Razor sharp audio filtering is available for tough SSB and CW reception conditions through the use of an astounding dual digital Switched Capacitance Filter (SCF) with independently adjustable selectivity skirts.
- Packet/RTTY - Separate interface jacks for a RTTY terminal unit and a Packet TNC are provided, while the mode selection buttons disable the mic automatically in the digital modes.

Direct Digital Synthesis (DDS)

Two 10-bit DDS and a magnetic rotary encoder provide silky-smooth VFO tuning, pure local oscillator signals, and very fast Tx/Rx change-over... and that's very important for QSK CW and digital modes. The DDS is teamed with an extremely low-noise, high performance receiver front-end using a PIN-diode controlled push-pull RF amplifier followed by a quad-FET ring mixer. The result is a very wide receiver dynamic range from 100kHz to 30MHz. Transmitter signal purity is also enhanced, with circuit noise nearly 90dB down from the carrier.

Convenience Features

- A highly efficient AC switch-mode power supply is built-in. It allows high duty-cycle transmission while keeping the weight way down, saving space and the added expense of external power supplies.
- An in-built Automatic Antenna Tuner with 39 memories is standard!
- Modular construction maximizes selectivity and makes servicing easy.
- Effective interference rejection is facilitated by IF shift, IF notch, IF bandwidth, and SCF audio controls.
- An adjustable noise blanker, a 500Hz B/W IF crystal filter and a comprehensive, easy to read user manual are also supplied.

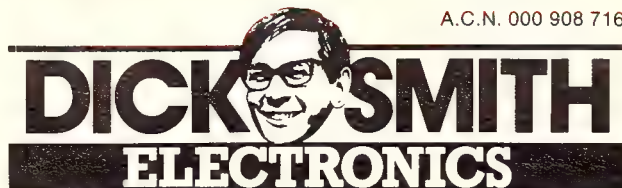
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Hurry, due to currency fluctuations FT-990 prices will increase in April. Buy now and save!

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B1297/LB

FT-757GXII ALL MODE H.F. TRANSCEIVER

Always ready for action! Whether you're in a demanding H.F. mobile situation or at home in the shack, the FT-757GX II won't let you down. Based on its popular predecessor (the 757GX), the MK2 features the same heavy duty die-cast heatsink and rugged metal chassis for long term reliability. As well, it offers even easier to use controls and new features such as a pushbutton mode selector and IF notch filter.

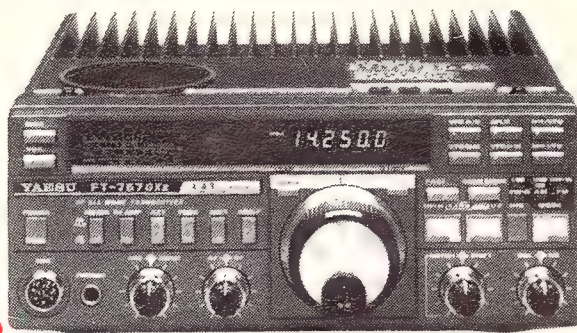
- All mode operation - SSB, CW, AM, FM (160m-10m)
- 100 watt output on SSB, CW, FM (25W AM) at 100% duty cycle
- High performance general coverage receiver - 150kHz to 30MHz
- Dual VFO's with single button VFO/memory swap functions
- Memories store freq & mode and allow band scanning between adjacent memories
- Inbuilt 600Hz CW filter, IF shift and IF notch filters, variable noise blanker, speech processor, iambic CW keyer and SWR meter.

Cat D-3492

Save \$100

2 Year Warranty

**Now Only
\$1595**



FT-650 6m, 10m, 12m ALL-MODE TRANSCEIVER

Yaesu's new FT-650 all-mode mobile transceiver has been designed with the 6m enthusiast firmly in mind. With continuous reception from 24.5 to 56MHz you can follow the rising M.U.F. and work the 6m DX as soon as the band opens. Output is a powerful 100 watts on the 24.5, 28 and 50MHz bands (SSB, CW, FM), and the use of 3 Direct Digital Synthesizers results in extremely clean Tx and Rx operation. Particular attention has been made to the receiver's performance, with 6 Band Pass Filters and a 2 stage, low noise RF Amp being used to provide exceptional sensitivity (SSB/CW, 0.125uV) and wide dynamic range. Includes user selectable tuning steps, manual or automatic tuning IF notch filter, an IF shift control for interference rejection, an IF bandwidth control, 105 scannable memories, an RF Speech processor and an effective noise blanker. Includes Yaesu MH-1 hand microphone.

Cat D-3250



\$2295

The Only Place To Shop For All Your Accessories

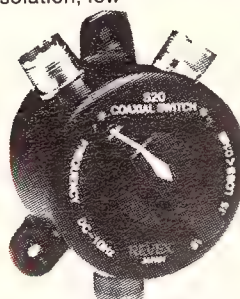
QUALITY 2-WAY COAX SWITCH

This high quality 2 position 50 ohm coax switch is ideal for HF, VHF and UHF uses up to 1000MHz. It offers superb isolation, low insertion loss (<0.1dB @ 1000MHz) and 1kW PEP HF power rating.

Cat D-5208

Revex model S20

\$59⁹⁵



Also available model S20N with N connectors

Cat D-5202

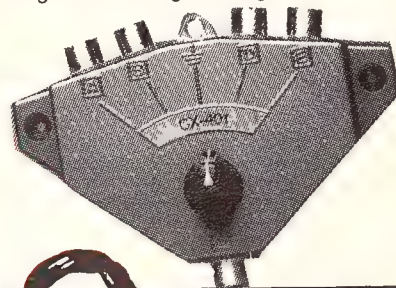
\$99⁹⁵

With Surge Protection! 4-WAY COAX SWITCH

A high quality 4-way coax switch featuring rugged die-cast aluminium construction, 2kW PEP (max.) power handling at 30MHz and only 0.3dB insertion loss. What's more, it has an inbuilt surge suppressor and automatic grounding of all unused connections to help protect against lightning induced surge damage.

Cat D-5204

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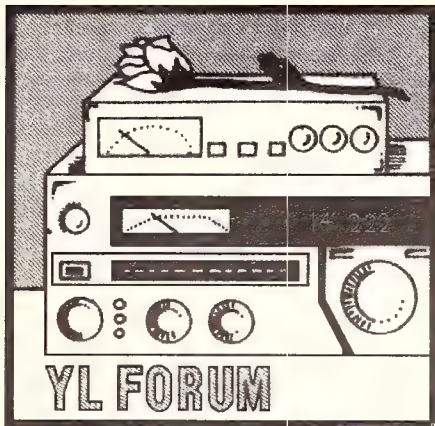
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ELECTRONICS**

DICK SMITH (WHOLESALE) PTY LTD A.C.N. 000 908 716

B1307/1



The A B C of amateur radio...

A for Amplifier — a square box designed to amplify your power bill. It also serves to amplify hums and clicks and to attract calls from stations you can't hear.

B for Bin — a special place used for filing 95% of information received in QSOs. Also known as file 13.

C for Contest — activities arranged by clubs and societies to occupy all band-space on weekends. Alleged to

Compiled by Kirsti Jenkins-Smith, VK9NL

PO Box 90, Norfolk Island, South Pacific 2899

be sponsored by environmentalists to keep thousands from touching Mother Nature or breathing dwindling supplies of fresh air.

D for Dinner — a word used to describe petrified pieces of undefinable substance and origin. Usually found lurking in luke-warm ovens throughout the nations, especially on weekends. (See **C**.)

E for Eyeball — To 'have an eyeball' or 'eyeball to eyeball'. Radio amateurs will travel great distances to 'eyeball' each other. When combined with chinwag the noise level increases several dBs over nine.

F for Frequency — an intangible watering hole where amateurs meet to exchange useful information about rigs, power levels, weather and each other's age and frailties.

G for Good One — an operation approved by the ARRL, and the complete opposite of 'no good' which has no such approval. Obtain proof that you have worked 100 'good ones' and ARRL will issue a certificate as proof of you having proof etc.

H for HI — abbreviation for rumbling belly laugh. Also used to emphasise joke as in 'I must QRT... my meal is on the table, HI.' (See **D**)

I for IRC — amateur currency issued and exchanged by post offices whose staff hope never to see another one.

J for Jumble — common state of many a shack.

K for Key — gadget used by experts in communications. Now considered to be museum pieces by the ignorant ones.

L for Lid — a magic word used in pile-ups to frighten away the faint-hearted.

M for Manual — a booklet amateurs sometimes refer to when all else fails, the brain is exhausted and the rig beyond redemption.

N for Negative — a refined long word meaning the more-common 'No' when used in radio communications.

O for Old Timer — having been there and done that, the wise old sage hardly lifts an eyebrow at either yuppies or yuppies who therefore believe him or her to be fossilised. Hence 'old fossil'. Remember that fossils, like diamonds, are forever!

P for Pile-up — where DXers get together to test the thickness of their skin. Some pile-ups are X-rated.

Q for QSL Bureau — a sort-of 'official dead letter box', situated in many countries and usually presided over by National Societies.

R for Radials — said to have been invented by a radio engineer with shares in a copper mine. It is estimated that thousands of miles of these wires lie more-or-less buried in the yards of suburban homes. (For 'less buried' see **V**)

S for Scientific approach — much favored by radio amateurs who may go to great lengths and intricate technological procedures to produce a computer image of a circle. Other people obtain the same result by tracing a circle around a jam-jar or similar.

T for Tower — a metal structure dominating many gardens. As a conversation piece in the neighborhood it far exceeds that of flowering shrubs or stately pines.

U for UTC — what used to be known as GMT or 'Zulu'. It is thought that the reason for the change to UTC is the wider scope for interpretations of this abbreviation; these include *Uni Time Cost*, *Upper Time Crust*, etc. Some believe it to be Swahili for My Local Time.

V for Vertical — an antenna providing an interesting array of strategically-placed trip wires which will catch the unwary visitor hands down.

W for Wireless — a description of the rats' nest of wires which occupy space behind the operating table.

X for XYL — a saint-like creature who patiently puts up with amateur radio and its consequences. (*You haven't met mine... Ed.*)

Y for YL — a female who has discovered the secret of eternal youth — hence *Young Lady*. Many XYLs can also be YLs, thus combining a saint-like nature with eternal youth. Modesty is her middle name. (*You definitely haven't met mine... Ed.*)

Z for Zone — The world is divided into zones for contest purposes and WAZ awards. To break the monotony, the number of your zone *does* change, depending on which division is being used at any given time.

Zzzz...

W & G WULF VK3BWW ANTENNAS

3el 10-11m	\$152.00
4el 10-11m	\$192.00
5el 10-11m	\$233.00
Duoband 10-15m	\$249.00
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5/8 Vertical 10-11m	\$109.00
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PACKET RACKET

Last month we spent some time discussing how the various modulation methods we use in packet radio relate to each other. For those of you who feel a little more in-depth explanation is in order, we shall return to that subject later to discuss some of the more exotic features of systems such as the G3RUH and similar modems for high speed packet use. This month, though, we'll have a look at some of the add-on modem products available for most of the common TNCs you are likely to use.

When amateur packet radio systems first began to develop in the early '80s there was little or no standardisation of modulation schemes. Early systems in Canada used 2400 baud schemes, but by the time packet arrived in America the choice seemed to be to utilise simple 1200 baud modem chips which were available for telephone line use. Typical of these were the AM7910 and TCM3105, which became common in recent years in most commercial products.

From the time of the Tuscon Amateur Packet Radio (TAPR) Association's TNC-1 design, packet systems have all used **synchronous data** formats. This means that the timing associated with the transmission of the data is dependent on a clock signal which is transmitted along with the data. We won't go into how it is done, but that is the way it is. The TNC-1 and its commercial derivatives such as the AEA PKT-1, used a specialised chip from Western Digital to handle the synchronous data format. But when the development of that system was abandoned and the TNC-2 came into existence the Z80-SIO chip was used instead. This was fortunate because it was more readily available. TAPR's TNC-2 used a modem design based on the XR2206 function generator chip for the generator side and the XR2211 phase-locked loop chip for the demodulator section. This design was low in cost but required a significant

number of additional components around it.

This design also used a little bit of added complication for extracting the clock signal from the data. A circuit known as a **state machine**, consisting of an EPROM and some low-level gates, was used to form a digital phase-locked loop for recovering the clock signal. This overall arrangement was very reliable — and is exactly the one you still find in the MFJ products derived from the TNC-2 design, such as the MFJ1270, MFJ1274 and MFJ1278.

PacComm decided to use a slightly different arrangement. It opted for a TNC-2-style system using the Z80-SIO and the state machine but with either an AM7910 or a TCM3105 modem chip depending on the model. This combination reduced the board space required for the modem section and allowed PacComm to produce a somewhat smaller unit.

Advanced Electronic Applications (AEA), on the other hand, decided to follow a different course. It used a Z80 CPU, the same as TAPR and its derivatives, but opted for the somewhat newer Zilog Z8530 serial communications controller IC rather than utilise the same Z80-SIO part as the others. Why? Well, the reason is simple: the Z8530 has a digital PLL circuit built into it for extracting the clock, so the whole unit could be simplified even more. So we got the PK-88, which is very similar in concept to the TNC-2 products, but with a modified implementation, all of this family being based on the Z80 microprocessor.

Kantronics, on the other hand, decided on a *totally* different approach. Its TNCs are based on a different microprocessor chip and a totally different serial communications arrangement. The entire TNC is implemented in a single chip with the exception of the analogue and control circuitry. This means that its product does not use either the Z80-SIO or the Z8530, nor does it have any need for the added complication of the state machine circuitry. All of the clock recovery is implemented in the firmware of the microprocessor itself.

All of the TNC-2-type TNCs have what is known as a 'modem disconnect header' fitted which allows the connection of an optional add-on modem card. The PK-88 could be used in this way but

the add-on modem is connected via pins in the 25-pin 'D' connector also used for the RS232 interface to the computer. This modem disconnect arrangement makes it relatively easy to incorporate new or modified modems into the TNC without a great deal of inconvenience and possible damage to the unit.

But why would you want a different modem?

2400bps...

Why would you want different modems? Well, there are several reasons. No matter what speed you have available, it is always obvious that you will want to go *faster*. Presently the bulk of packet operation is on 1200 bps, as we discussed last month, but many users are starting to want something a little better.

So along came Kantronics and started offering a 2400 bps version of its TNC product. Fairly soon MFJ offered the MFJ2400 add-in modem card for its TNCs and for other TNC-2-based products. This kit included the card, necessary connectors, power and audio cabling and mounting hardware with a manual detailing the installation and set-up procedures. Today's kit can be used with any MFJ TNC, as well as PacComm and any other TNC-2 clone product.

Fortunately 2400 bps operation is totally compatible with the same radios used for 1200 bps operation. This makes it easy — if you have a TNC-2 or compatible TNC you can add the modem and get going straight away with 2400 bps operation.

AEA, through local dealer Emtronics, has made available a 2400 bps upgrade for the PK-232 multi-mode controller. I haven't actually had one in my possession yet but I have no doubt it works as well as the rest of the AEA product range. MFJ also produces a version of its 2400 bps modem known as the MFJ2400X, which is designed to be fitted into the PK-232.

PacComm does not offer a 2400 bps TNC, either as a complete unit or in the form of an add-in modem. Fortunately, it uses a standard TNC-2 modem disconnect, so the MFJ2400 can be utilised in its products.

Kantronics has adopted a slightly different approach. Its most basic unit, the KPC-2, does not have the ability to

By John Day, VK3ZJF@VK3BLW

PO Box 281, Oakleigh, Victoria 3168

use an add-in modem. However, the KPC-2400 model has a built-in 2400 bps modem on the same PCB. This means that the integration of 2400 bps is totally seamless and transparent to the user from the word go. No options, no hassles, just select 2400 bps and away you go.

The KAM, Kantronics' multi-mode unit, and the KPC-4, its dual port 1200 bps unit, can both be fitted with a 2400 bps upgrade modem. This makes 2400 bps operation possible on these machines, but you must use the Kantronics KM-2400 modem unit, as none of the other boards will fit directly to the TNC. (*Crikey, it sure makes it fly compared to the 1200bps! Ed.*)

Fortunately, all of the manufacturers use the same protocol standards as the original Kantronics development, so no matter which 2400 bps equipment you are using you will be able to talk to each other.

One product I haven't mentioned is the **Telereader** TNC-24 mk-II. We asked the importer for a unit for evaluation about August last year and as yet haven't seen one so we can't really comment on that. I am led to believe that it offers an internal 2400 bps modem compatible with the others.

(*Gee, it's amazing what the promise of a little publicity will do — look for our forthcoming review of this interesting TNC, along with one of the latest ARA PK-232MBX. Ed.*)

In summary, then:

TNC	Use this modem
MFJ1270B	MFJ2400
MFJ1274	MFJ2400
MFJ1278	MFJ2400
KAM	KM2400
KPC-4	KM2400
PK-232	AEA or MFJ2400X
PK-232MBX	AEA or MFJ2400X
PacComm	MFJ2400

(The MFJ2400 covers all PacComm TNCs except Tiny2 or HandiPacket)

Now to 4800 bps

For a variety of reasons, very little has ever happened with packet radio operating at 4800 bps. One Canadian group had a 4800 bps option on its IBM-PC plug-in card but nothing much happened until about two years ago when a group right here in Canberra got together and decided to give it a fly. To be honest I can't even remember who the

prime movers were. But in VK1 they have access to a local BBS and a digipeater both using a 4800 bps modem developed by a couple of local amateurs.

At the recent Gosford Field Day I noticed the good folks from Blamac in Cooma selling the boards for this modem so you may want to give them a call if this is of interest to you.

The one area where you will have trouble with 4800 bps is radios. As the data rate is increased the demands placed on the radio increase exponentially. If you want to operate at 4800 bps I think many radios could be suitable but be prepared to make some modifications or be selective about the radios you use.

Faster, FASTER, FASTER!

At present most users of packet will have to be content with 1200 or 2400 bps operation. For some specialised users, and for satellite operation, 9600 bps is now a reality. But this speed comes at a cost, particularly on the radio side. Systems operating at 9600 bps are all presently derived from the work of **James Miller, G3RUH**, done originally for AMSAT for a variety of satellite operations. It is actually a little difficult to come up with a name for this modulation scheme, but it could be called direct FSK with a raised cosine pulse-shape.

Last month, when we looked at some of the fundamentals of modulation, we didn't quite make it to 9600 bps systems, but rest assured we will! The G3RUH modem is very cleverly designed, and is based around a randomiser and finite impulse response digital filter on the transmit side and a descrambler and digital PLL clock separator on the receive side. The core components are two EPROMs with attendant random logic support and a pair of eight-bit digital-to-analogue convertors. (*Pardon? Ed.*) Maybe one day we will explain to you how it works, but not this month!

Add-in modem cards for 9600 bps operation are available from PacComm and MFJ for use in TNC-2 and compatible TNCs. Both of these cards are licensed versions of the G3RUH design and are totally compatible. In the case of both boards, they are supplied with all the necessary bits to enable them to be fitted easily into your TNC.

The biggest difficulty in operating at 9600 bps is radios. As a general rule there are several simple guidelines:

1. The radio must use PURE FM in the transmit modulator. (*Not* phase modulation and *not* frequency modulation of a synthesiser.)
2. The output of the modem must be connected DIRECT to the modulator with no more than a large value of coupling capacitor, but preferably direct DC-coupled.
3. Receiver output needs to be taken DIRECT from the discriminator or demodulator output with *no* processing of the signal AT ALL.
4. The bandpass characteristics of the radio must meet reasonably strict guidelines which are detailed in the modem manual.

Unfortunately this means that very few radios are readily available which meet the requirements. Basically, the only ones I am *sure* of are:

Icom '75' series (IC-275A or H, IC-475A or H, IC-575A or H, IC-1275A), IC-970A or H

Kantronics D4-10 or DVR2-2

Tec digital radios (see below)

Yaesu FT-726R or FT-736Rs

(*I thought it strange that no Kenwoods were on the list, so I rang Kenwood Electronics Australia to find out whether any of its radios should also be on the list. After all, Kenwood manufactures a radio specifically designed for working through satellites, and it has even a Packet connector on the back...*)

A little digging produced an instruction manual for interfacing a commercial G3RUH modem to a variety of radios, so it may well be that these ones also fit the requirements outlined above: **Icom** IC-251A, Icom IC-2400A, Icom IC-3230A, **Kenwood** TM-421A, Kenwood TM-431A, Kenwood TM-721A, Kenwood TM-941A, Kenwood TS-790A, **Standard** C-150, C-450, **Yaesu** FT-212RH, FT-712R, Yaesu FT-4700RH. Ed.)

Details of the basically simple modifications for the various radios are available from AMSAT Australia, but if there is enough interest we might publish them here. (In other words, if you want information, ask for it!) These ra-



dios are very commonly used for satellite operation and if you are interested in 9600 bps operation for PACSAT then this is the sort of equipment you will need.

Kantronics produces two transceivers specifically designed for high-speed data operation. The **DVR2-2** (Digital Voice Radio 2 metres 2 watts) is a two-channel, crystal-controlled radio designed for operation up to 2400 bps on one input and up to 9600 bps on another input. A microphone can be used if necessary for co-ordination or whatever. With only a two watt output this transceiver is somewhat limited in range but works very well and certainly provides a very usable way to get going with 9600 bps on two metres.

Its UHF cousin, the **D4-10**, is a 10 watt output transceiver, which is also crystal-controlled. One input is for use with pre-processed signals of up to 9600 bps and the other is a wideband signal path for 19,200 bps or possible other new modulation schemes. Designed specifically for digital use, the D4-10 does not even have provision for connecting a microphone!

These two products represent the only 100 per cent "I-didn't-even-have-to-take-off-the-cover" way of getting on air with 9600 bps packet. (*No they don't John — unless you can stuff the rocks in without lifting the bonnet! Ed.*)

The Tec (I think I got it right, because it isn't a tooth brush!) radios are sold by Blamac in Cooma. They are very compact low-power single-channel units designed for data operation. I haven't had a play with one yet (hint, hint, Mr Blamac!) so I can't really say anything about it.

Other TNC types

One thing I haven't mentioned so far is the Kantronics Data Engine (*You just did, John. Ed.*). This is essentially a *super* high-performance TNC development platform. Unlike other TNCs, the KDE uses an NEC V40 processor which is a cousin of the 8086 family used in your friendly little IBM-PC. Normally supplied with 64k of EPROM and RAM, the KDE is supplied with firmware which emulates the standard TNC command set.

But the secret of the KDE is that it has developers' kits available for both the design of modems and firmware which allow *you* to write whole new sets of firmware with nothing more than the same software you would use for developing software for the IBM-PC.

Electronically, the Data Engine is a radically different product. The main PCB has no modems on it at all. But it *does* have two sets of connectors which are used to install one or two daughter-board modems. Presently Kantronics offers modems for 1200 bps AFSK, 2400 bps QPSK and a combined unit for 9600 and 19,200 bps operation. For those developing modem hardware there is a jumper board available which brings the modem signals out to the 15-pin 'D' connector on the back panel. Thus you can build entire modems in external boxes or you can experiment with other modem designs externally.

Kantronics has rather cleverly designed the standard firmware to support a variety of modem types. All of the relevant details are to be found in the Modem Developers' Kit which is supplied with the unit.

As an alternative to the standard firmware, Kantronics also offers a custom version of the G8BPQ PC-Node software. This product offers full NET/ROM switch capability in the TNC with support for the Multi-drop-KISS format on the RS232 connector to allow all sorts of interesting multi-port switch systems.

Well, that's all for this month. If you have any Packet problems (other than the operator just down the road who spreads his signal right across the whole of 20 metres) or want answers to some general questions, feel free to write to me at the address at the top of the page, or send me a packet or three to VK3ZJF@VK3BLW.

73 from John.

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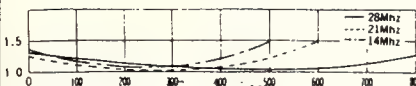
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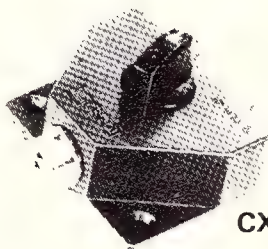


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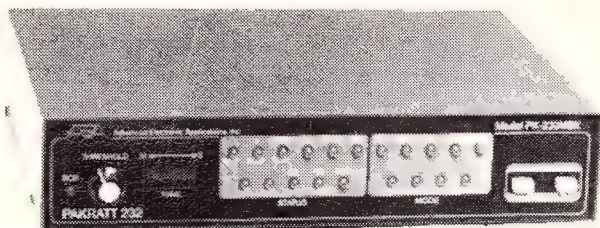


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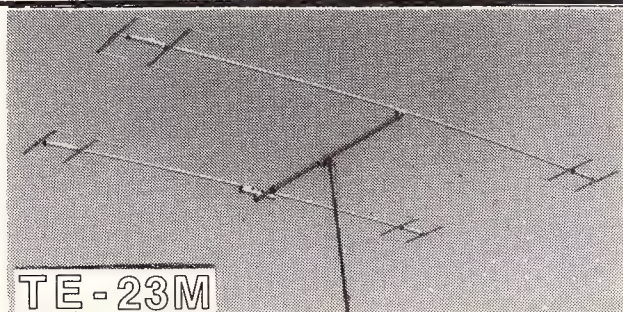


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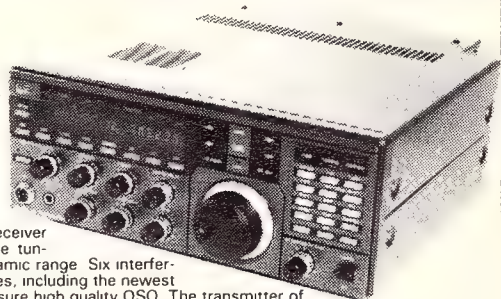
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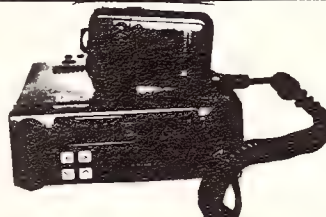


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60 years of HCJB

It was Christmas Day, 1931. From a humble building in Quito, Ecuador, the first broadcasts from what would become one of the world's broadcasting giants went out for the first time. Only 200 watts on 4107 kHz, and just 13 radios in Quito were available to pick up that first transmission.

The now-mighty **Voice of the Andes** was a vision and a tremendous act of faith on the part of two men — Clarence Jones and Rueben Larson. It was while playing in a brass quartet in evangelistic campaigns in Chicane that Dr Jones was introduced to a new invention: radio. The quartet made their premier broadcast in 1922 from the roof of the city hall, and for the first time Chicago's crystal sets came alive with the Gospel message.

In 1928, Dr Jones set sail for Venezuela, seeking government permission to establish a missionary radio station. To his surprise, the president refused, and so did the governments of Colombia, Panama and Cuba. Some time later, Dr Jones met Grace and Rueben Larson, working with Quechua Indians in Ecuador. They also had a dream of a 'singing radio' to broadcast the Gospel message in the Amazon jungle region and through the help of Dr Larson, HCJB received a 25-year contract from the Ecuadorian government.

All the experts recommended that Ecuador was not a good place to base

a radio station because of the mountainous terrain, yet Dr Jones, Mr Larson and two other missionaries founded the radio station under the auspices of a legal corporation named 'World Radio Missionary Fellowship'. The Spanish phrase 'Hoy Cristo Jesus Bendice' (Today Christ Jesus Blesses) was chosen to go along with the assigned call letters, '**HCJB**'. In English the slogan was 'Heralding Christ Jesus' Blessings'.

A large property north of the city was rented and a studio rigged up in the house. A microphone was suspended from hair curlers inside a packing crate (the 'cavern'), and a hole was carved in the wall of the adjoining control room. A 200 watt transmitter was installed in a sheep-shed and two 85 foot eucalyptus poles served as antenna towers.

The first broadcast was scheduled to go on the air on Christmas Day, 1931 and, by Christmas Eve, all was in readiness when the only mercury power tube blew out. At the last minute another tube was lent by Carlos Cordovez at *Radio El Prado*, an experimental station located in Riom-bamba, a six-hour drive away. At 3pm on that Christmas Day, Clarence Jones announced for the first time over the airwaves 'Hoy Cristo Jesus Bendice', and the signature hymn began, 'Great is thy Faithfulness.' Throughout all Quito there were 13 crystal receiving sets: *all* were tuned in.

The high Andes mountains straddling the equator proved to be an ideal site for international broadcasting. Today, HCJB broadcasts in 19 languages and more than 20 Quechua dialects, received loud and clear in many parts of the world. In 1934 the HCJB 'Radio Circle' began producing small crystal sets pre-tuned to HCJB, and these were sold for a few cents to people throughout the country. Later, pre-tuned transistor sets were set up at listening posts in villages all over Ecuador. By 1940, only nine years after its founding, HCJB was broadcasting with a 20 kW transmitter, and this was able to leap across great distances.

In 1956 the first of several 50 kW transmitters was installed. These more powerful units had greater energy requirements and, in 1961, construction began on a hydro electric plant on the nearby Papallacta River. The plant would be able to generate 1.8 million watts of electricity, and eventually went

into service in 1965. Later, it was expanded to generate up to 6 megawatts of power. By 1977, engineers were designing an immense steerable parabolic antenna which, when linked with the new 500 kW transmitter, would give the center pinpoint of the radio beam 100 million watts of effective radio power.

The presence of medical missionaries with HCJB in Ecuador has led to other projects, including two major hospitals, a rural health program, water drilling projects, and research on river blindness and other tropical diseases.

HCJB is also involved in radio projects throughout the world, including **HOMO** in Panama and several AM and FM stations on the US-Mexico border. Through co-operative efforts with Trans World Radio (**TWR**), the Far East Broadcasting Company (**FEBC**) and **SIM** International, HCJB is working to place Christian programming in additional languages on the air in all parts of the globe.

International broadcasting has come a long way since 1931 when the pioneer missionary broadcaster, HCJB, took to the airwaves. Today the 'Voice of the Andes' is recognised as a leader in programming and technical developments, and takes its place as one of the giants of the world broadcasting business.

This item acknowledged to *Ken MacHarg*, in the *Andex* bulletin.

(*For those who may be interested, HCJB runs a regular amateur radio-oriented program each Sunday evening. Called **Ham Radio Today**, the program airs Sundays at 0800z, and I hear it very loudly on my pocket trannie on 9745 kHz. Ed.*)

Malaysia

Via Fidonet 'Shortwave Echo' we have the latest schedule for the **Voice of Malaysia**, the external service from Kuala Lumpur:

0550-0825z English on 6175, 9750 and 15,295 kHz

0830-1030z Malay on 9750 and 15,295 kHz

0900-1600z Indonesian on 6175 and 9750 kHz

1030-1230z Mandarin on 11,885 and 15,295 kHz

1300-1430z Thai on 6100 kHz

1430-1530z Burmese on 6100 kHz
1530-1700z Arabic on 15,295 kHz
1700-1900z Malay on 6175, 9750 and 15,295 kHz
2200-0000z Indonesian on 6100 and 6175 kHz

The English service at 0550z gives particularly good reception in Australia on 15,295 kHz, especially towards the end of the transmission.

AWR Russia update

Last issue we briefly alluded to **Adventist World Radio's** historic plan to broadcast via leased facilities in Asiatic Russia. More details are now to hand and AWR Russia is to commence broadcasts on shortwave this month. AWR is using some of the spare transmitter capacity at the Novosibirsk site, which I understand contains more than 30 high-powered shortwave transmitters and an array of antennas to match, beaming in most directions.

The target areas include north-western China, India, Sri Lanka, Bangladesh, Nepal, Myanmar, Greece, Turkey and Syria, with 13 languages eventually to be utilised.

As well as being the first Christian broadcaster to use shortwave transmitters in the former Soviet Union, Adventist World Radio has taken the additional pioneering step of actually producing most of the programming in its own studios in Moscow. Two frequencies are to be used initially:

11,855 kHz — Burmese 0000-0100z and 1200-1300z; English 0100-0200z, 0700-0800z and 1300-1400z; Hindi 0200-0300z and 1400-1500z; Russian 0500-0700z; and Mandarin 0900-1200z.

9835 kHz — English 1900-2000z; Russian 1700-1900z; Mandarin 2100-0100z.

These services will supplement the Asian coverage from AWR's existing facility on Guam.

This information received direct from the folk at AWR-Asia.

An era to end

Strangely enough, the items in this column of **Amateur Radio Action** do not usually cater for the major interest of the biggest group who read the magazine, ie amateur operators. This time around, however, we have news that should appeal to everyone.

According to **Radio Nederland's**

'Media Network' program, the **BBC's** shortwave transmitter site at Daventry is to be moth-balled at the end of the current schedule period, on March 29. The site itself has been in use by the BBC for 67 years, the last 60 of these for shortwave broadcasts. This makes Daventry one of Britain's historic locations and suitable steps have been taken to ensure that its heritage is preserved in years to come.

To mark the closure of the site an **amateur radio event** is being planned, using the existing Daventry aerials, with the expected on-air dates being the 4th, 5th, 11th and 12th April on 80, 40, 30, 20 and 15 metres. Unfortunately I don't have exact frequencies, but the station will be recognisable by its distinct call sign, **GB67XX**. GB is of course Britain's special events prefix, 67 is the age of the facility, and 5XX was the call sign of the medium wave station operating from Daventry in 1925. Special QSL cards, I'm told, are expected to be available for the event.

New Chinese Outlet

The **Voice of Pujiang** in Shanghai has made a rare frequency change and is now heard on 7115 kHz for its service in Chinese from 0955-1545z. Strong signals are observed at 1215z, when the new frequency is in parallel with regular 3280 and 4950 kHz. The former 3990 kHz appears to have been deleted.

Cuba on 22 metres

Radio Havana has appeared on the 22 metre band for what would seem to be the first time. A program in Spanish is noted on 13,700 kHz from sign-on at 0000z, followed by English a little later on, until a 0430z sign-off. Unfortunately, there is a bit of a reception slump during the middle of the broadcast, but things should improve somewhat as we move towards the colder months.

The station had announced earlier that it is considering a test transmission in the 120 metre band as a special treat for DXers, however I've heard nothing further at this point. It would have some novelty value, but would need to be in our late evenings — say 1100-1300z — to make reception a possibility in this part of the world.

'Radio Free Bougainville'

Once again the shortwave bands echo world events, and **Radio Free**

Bougainville is the name of a station claiming to broadcast from the secessionist Pacific island, presently blockaded by Papua New Guinea. Reception has been on 3880 kHz until sign-off around 1145z, with programming in Pidgin and English.

My colleague **Mick Ogrizek**, of **Ballan, Victoria**, also tells me that he's been hearing the station on 21,490 kHz USB after 1300z with requests for humanitarian aid and giving details of the islanders' plight. The target area at this time is said to be Europe, but it is obvious that the equipment used is a converted amateur rig and reports of reception outside of the Pacific area haven't been common.

Finance for the operation is said to be provided by clergymen and some sections of the amateur radio movement.

Taiwan

The **Broadcasting Corporation of China** has for some time relayed its domestic service broadcasts on shortwave, though accurate schedules are always difficult to come by. This one, monitored by members of Japan's Asian Broadcasting Institute, would appear to be close to the mark:

News Network 0100-0400z on 7295 kHz, 2100-1700z on 9610 kHz, 2100-0000z and 0900-1700z on 9765 kHz, 2100-1700z on 11,725 and 11,845 kHz, 2200-0100z on 15,270 kHz.

Popular Network 0100-0900z on 9280 kHz and 2100-1700 on 11,885 and 15,125 kHz

There are also some BBC relays via the facilities of Family Radio in the USA, intended for North American reception.

Arrivals and departures

Our regular roundup of new stations, reactivations and closures begins with two interesting items gleaned from the *Media Network* session.

• Firstly, the big news is that **Radio Kuwait** is set to reactivate its shortwave service and, in fact, will most likely already be on air by the time you read this. Keen Gulf War observers will recall that the allied forces totally destroyed the transmitter complex near Kuwait city, as it had been commandeered by the Iraqis and used for relays of programming from Baghdad, including the infamous **Mother of Bat-**

ties Radio service. Precision bombing by the US Air Force had silenced the high-powered facility although, strangely enough, the antenna arrays remained largely intact.

A 500 kW transmitter is to operate initially on 6055 kHz from 0400-1305z, beamed to the Gulf, and from 1315-2345z on 11,990 kHz for the Eastern Mediterranean. Details are vague, but there will also be a service to North America and Europe on 15,505 kHz, reportedly from 1700-1800z.

Programming will be relayed entirely from Kuwait's domestic Arabic language service.

• More surprising is the news that Spain's shortwave voice, **Radio Exterior Espana**, will shortly sign an agreement with Rumanian authorities for the use of transmitters and antennas to beam REE programs into eastern Europe. In a strange turn of events, it transpires that the transmitters to be used were actually those utilised by the clandestine station **Radio Independent Spain** until its demise in 1977. Radio Independent Spain was operated by the Spanish Communist Party and had broadcast a steady diet of dissent back towards Spain from its Rumanian headquarters since the Spanish Civil War. It follows that much of the transmitting equipment may be somewhat dated, and one wonders to what use it has been put in recent years. There is obviously still much to be learned about the broadcasting

structure in the former Communist states of eastern Europe.

Still on the subject of Radio Exterior Espana, it is believed that the station's new Central American relay base in Costa Rica is nearing completion.

• On the departures scene, it would appear that the **Ukraine** has taken full control of the many shortwave transmitters within its boundaries and is charging significant rentals for their use on a relay basis.

A report originating from *BBC Monitoring* indicates that *Radio Moscow* programming has disappeared entirely from Ukraine-sited frequencies, which now carry the domestic and external services from Kiev. *Radio Vilnius*, in nearby Lithuania, has also made mention on air of paying rental to the Ukraine authorities for relays of its external service, which is in jeopardy due to budgetary constraints.

Marianas Islands

KFBS, Saipan has this schedule, which includes the recently-introduced English program from 1930-2000z:
0855-1359z Russian on 11,605 kHz
0925-1229z Indonesian dialects on 15,380 kHz
1110-1500z Chinese on 9495 kHz
1125-1145z Mongolian on 11,705 kHz
1145-1444z Russian on 11,705 kHz
1230-1300z Malay on 15,380 kHz
1300-1430z Vietnamese on 9670 kHz
1400-1830z Russian on 9465 kHz
1430-1530z Myanmar on 9670 kHz

1445-1530z in Ukrainian/German/Russian/Uzbek/Kazakh/Kirghiz on 11,665 kHz

1500-1515z Uighur on 9495 kHz, 1830-1930z Ukrainian/German/Polish on 9465 kHz

1900-1929z in Hausa, 1929-2000z Yoruba, both on 9475 kHz

1930-2000z English 9465 kHz

2155-2250z Indonesian on 15,320 kHz and 2300-0000z Vietnamese on 15,320 kHz.

This schedule courtesy of Bob Padula.

Call change for Canadian

The low-powered Canadian outlet on 6005 kHz is now known as **CIOX**, according to *Jerry Berg*, reporting to *Fine Tuning*. Formerly known as **CFCX**, the Montreal-based station takes a relay of medium wave outlet **CIOC**, which now sports a country and western format.

Reception in Australia is generally possible during our winter months, but intending listeners will need to knock out the Costa Rican, **Radio Reloj** on 6006 kHz, and a Japanese station also using 6005 kHz. The best time to try is around 0700z, and reception reports will be rewarded by QSL cards if sent to: 200 McGill College Avenue, Montreal, Quebec H3B4G7, Canada.

• Still on the subject of Canada and QSL cards, I am dismayed to hear that **Radio Canada International** no longer has the financial resources to

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issue QSL cards in response to accurate reception reports. RCI has for some years had a 'once a year' policy where blank cards were sent to listeners on its mailing list for completion and return. These were then stamped 'verified' and sent back to the listener.

This system was always far from ideal, but the latest stop-gap measure involves forwarding reports to the **Canadian International DX Club**, which has undertaken to handle all reception reports on RCI's behalf. Funds are no longer available to print new cards, and surplus supplies from past years will be utilised.

Serious ethical questions have been raised by this proposal, and it is not yet clear whether the program details in reports will actually be verified as correct by RCI itself or by the club.

Pakistan

From *Shortwave News*, we have the latest schedule for domestic services from **Radio Pakistan**.

API-1 100 kW:

0045-0215z on 5085 kHz (Islamabad program)
0300-0400z on 9495 kHz (Balti Service)
0800-1030z and 1034-1103z on 9420 kHz (Islamabad)
1103-1113z on 9420 kHz (Balti)
1113-1245z (Islamabad), also on 9420 kHz
1300-1303z (English news) and 1303-1600z (Pushto) on 6070 kHz.

API-2 100 kW:

0045-0403z (Islamabad) on 6070 kHz
0430-0530z (Sheena Service) on 9645 kHz

0600-0830z (Rawalpindi program)
0820-1115z (Islamabad) and 1130-1337z (Islamabad) on 9645 kHz
1400-1805z (Islamabad) on 7010 kHz.

Regional news

1030-1034z in Pushto on 9420 kHz
0330-0337z in Punjabi on 6070 kHz
0630-0634z, 1030-1034z and 1330-1337z all on 9645 kHz
0630-0634z Pushto on 9495 kHz and 1103-1113z Sheena on 7325 kHz
0330-0337z Pushto on 7290 kHz.

Regional Services

Quetta:
0045-0403z (0045-0345z and 0400-0820z Fridays) on 7170 kHz
0600-1215z (1000-1215z Fridays) on 7170 kHz
1230-1805z on 7150 kHz.
Peshawar:
1300-1500z on 7050 kHz
Rawalpindi III:
0045-0405 and 1430-1808z on 4790 kHz
0930-1415z on 7265 kHz.

New channel for NZ

Radio New Zealand is getting in early these days with announcements of frequency changes. The station advises that the new channel of 11,735 kHz will be introduced on May 4, 1992, for the period from 1800-2000z. This replaces the present 15,120 kHz.

North Korea

Radio Pyongyang announces this amended schedule for English broadcasts:

To South East Asia and India:

0400-0450z 15,180, 15,230 and 17,765

kHz

0600-0650z 15,180 and 15,230 kHz
0700-0750z 15,340 and 17,765 kHz
0800-0850z 15,180 and 15,230 kHz
1300-1350z 9640, 13,650 and 15,230 kHz

To the Middle East and Africa

1500-1550z, 1700-1750z and 2000-2050z, on 9640 and 9977 kHz

To Europe

1500-1550z and 1700-1750z on 9325 and 11,705 kHz
2000-2050z 6576 and 9345 kHz
1300-1350z 9325 and 9345 kHz

To the Americas

2300-2350z 11,700 and 13,650 kHz
0000-0050z 11,335, 13,760 and 15,115 kHz
1100-1150z 6576, 9977 and 11,335 kHz
1300-1350z 13,650 and 15,230 kHz

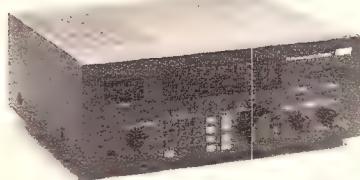
Amateur Radio Action's *Shortwave Notes* are compiled by **Craig Seager** from information gathered from many sources, including members of the **Australian Radio DX Club Inc.**

For more information about the hobby of broadcast DXing and SWling, details about the ARDXC and its member activities, and a sample copy of the club's monthly bulletin 'Australian DX News', please write to: Australian Radio DX Club Inc., 258 Dandelion Drive, Rowville, Victoria 3178.

Please enclose six 45¢ stamps — and don't forget to mention that you read about the club in **Amateur Radio Action!**

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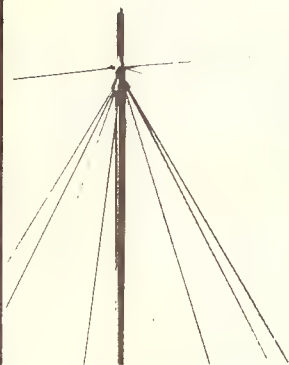
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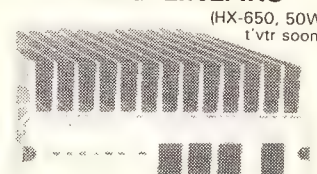
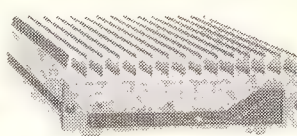
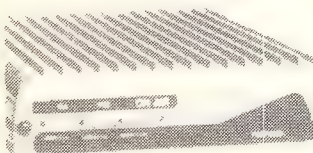
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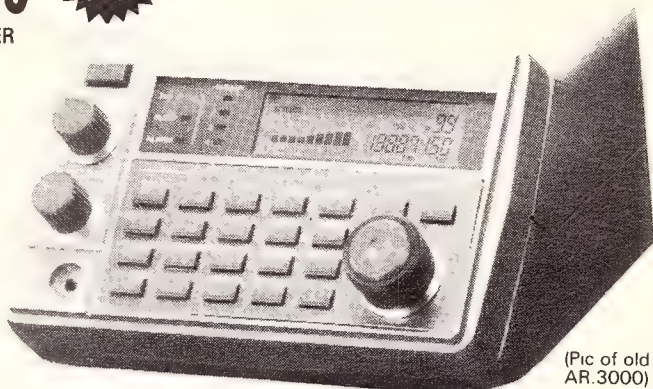


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EQUIPMENT BRIEF

Yaesu FT-912R

23cm transceiver

By Neil Duncan, VK3OK,
Heathmont, Victoria

'Space, the final frontier' — the opening line from **Star Trek** (the old, *great* series of course). The concept of great unexplored realms never fails to stir the imagination. In a similar vein, consider the idea of being in command of a snapping 10 watts of power on the 23 cm band — with a full 60 MHz frequency coverage! (*Snapping? Ed.*)

The **Yaesu FT-912R** is a compact FM transceiver with just such capability. Consider what that allows you to do. For a start, merely *owning* a 23 cm rig means that you are heading into those unknown regions, until recently the exclusive domains of the mad experimenter type. With a little effort, you could just about make your own microwave oven with one of these! You see, 10 watts on 23 cm is pretty formidable. It is not all that long ago that we 'average amateurs' looked in awe at 100 milliwatts at such frequencies.

Just consider the technologies involved in getting all of the necessary goodies into one small box. A hot, UHF front-end, a 10 watt amplifier, synthesisers, converters and all that. I shuffled back through a few old ARRL handbooks (a few years ago valves were used!) just to note much effort used to go into getting onto the 23 cm band.

To give you an idea of the sort of frequencies we are talking about, consider the old 'disappearing power trick'. To master that trick, you take one hi-tech 10 watt, 23 cm transceiver and just a couple of metres of a pretty ordinary sort of coaxial cable. Hook up a good antenna at the other end and hit the transmit button. A mere *five* watts emerges from the antenna — so where has the rest gone?

Finally, how about the idea of a multi-element beam? Come on, you HF buffs — haven't you always wanted a 12-element beam on 20 metres? On this band, such a beam is, how shall we say... *tiny*. Antenna construction is one of the strong points of this sort of frequency.

On air at 23cm

Who is up there? Well, until fairly recently, only the cream of amateur radio occupied that place. You know the sort of person I mean. The elite, the famous *few*, the heroes of the hobby, the vanguard of what we are *really* about, the super home brewers, the bastions of better building, the mega stars of the hobby. (*Good grief. Ed.*)

In short, the whizz kid and super amateur we all hold in awe. One sees their name in print in the REAL amateur journals too — *especially* ARA. (*Just as well you added that! Ed.*) One doesn't have a QSO with these gents, one grovels and asks humbly for advice. It usually flows forth too. Ad nauseam.

The trouble was that once the commercial gear hit the 23 cm band (yes there are more than a couple of rigs there now), those birds flew the coop seeking safer refuge on even higher bands. I am told their savings on antenna tubing has been considerable. We grunts of the hobby seem

to have soiled their exclusive domain with commercial gear — and so off they went!

Nevertheless, I did go to quite a lot of trouble to look around the band (in vain) for them. Armed with an FT-912R, a discone and a short length of heat-resistant coax, I called CQ, scanned, snooped and generally looked behind every rock and up each 23 cm tree. I'm sorry to report that nary a soul would talk to me.

Actually, I did eventually establish contact. You see, a quick phone call to a known 23 cm devotee produced the necessary response. Oh, and one more point. Operating 23 cm is THE way to go mobile. It penetrates tall buildings, has great range and of course uses minuscule antennas. And yes, there are actually growing throngs of users up there. Apparently, 23 cm is going great guns in the states and in the UK — especially in the mobile mode.

(*I used the FT-912R in my mobile for a few weeks. I worked quite a few stations in all, although the activity is best described as 'planned'. Quite a lot of satellite and packet work is creeping onto this interesting band, where antenna efficiency and gain is the key to successful operation. Base operation with a high-gain vertical was interesting, and simplex contacts over surprising distances were possible. Ed.*)

What'll she do, Mister?

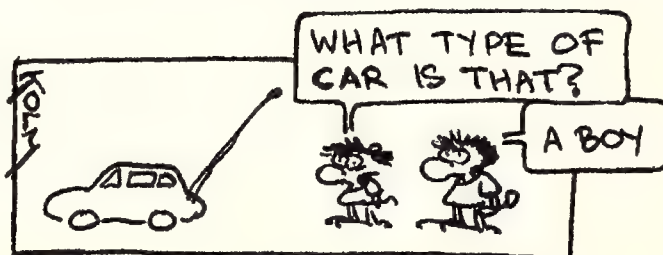
From the outside, the Yaesu FT-912R is indistinguishable from the current Yaesu two metre and 70cm mobile rigs, the FT-212RH and FT-712R. These two very well-known rigs have gained tremendous popularity through their high power, super receivers and excellent transmit audio. I have no doubt that the FT-912R will follow suit.

Many of the features of these rigs are in common. That is, the 18 memories (plus three special ones), the large LCD display, a call channel and the option of a Yaesu speech unit (the DVS-1) should you happen to want record-and-play-back facilities in your VHF/UHF/23cm operation.

The widest variety possible of repeater offset arrangements are allowed for in the FT-912R (user-programmable) but the set arrives from the factory ready to go according to the band-plan in this country. This is a set which accommodates change!

The transmitter is capable of 1, 5 or 10 watts operation. That is, local, medium-haul or long-range operation at the touch of a button. An internal lithium battery ensures that information you enter will last for years and in the event that your mate buys an FT-912R, you can clone all of your set's internal programming into that set via the mic cord.

Finally, remote operation via tone sequences is available if you want to stretch things a bit. Oops, drop that, I'm not sure you are allowed to. Consider the use of packet radio instead. This set is stable, reliable and operates at high speed. (*Snapped by the speed camera again, eh Neil? Ed.*) I found the FT-912R a delight to use, extremely sensibly designed and laid out and an asset to the shack.



Summary

There is a kind of chicken or egg situation regarding 23 cm operation. Many, like me, would get on that band if there were people out there to *talk* to. The effort and time needed to build gear for 23 cm is beyond what I can justify in the hobby, but for many this aspect would be a great pleasure. Until recently, the cost of commercial gear has been just too high.

How about a small, reliable set suited to both base station and mobile use? One which doesn't cost the earth and whose operation is virtually identical to the matching gear for two metres and 70cm? This set fills the bill nicely and should prove very popular.

I reckon Yaesu is well on the way to encouraging migration to the fascinating, wide open spaces of the 23cm band. Lest you think this represents *the* final frontier for commercial gear, however, stand by for a surprise. There is gear coming out for even *higher* frequencies I am told.

Full marks to Yaesu for bringing 23 cm operating into the affordable reach of we 'average' amateurs! And remember that old adage... 'use it or lose it'.

(Please note that this transceiver has not yet reached the stores. Contact DSE's head office on (02) 888 3200 for more information, or write to PO Box 321, North Ryde 2113, for details on availability. Ed.)

Amateur Radio Action thanks **Dick Smith Electronics** for the loan of the review transceiver.

Specifications

General:

Frequency range: 1240 - 1300 MHz
Channel steps: User-selectable from 10, 12.5, 20 and 25 kHz
Repeater Shift: Programmable
Mode of emission: G3E (ie FM!)

Antenna Impedance: 50 Ω unbalanced
Supply voltage: 13.8 volts DC \pm 1%
Supply current: 5A transmit (for 10 watts O/P)
660 mA receive
500 mA standby

Operating temp: -20° to +60° Celsius
Frequency accuracy: \pm 1.5 ppm
Case size: (WHD) 140 X 40 X 160 mm
Weight approx: 1.25 kg
Memories: 18 with three 'special'

Receiver:

Circuit type: double conversion superhet
IFs: 58.3 MHz, 455 kHz
Sensitivity: <0.25 μ V for 12 dB SINAD
Image ratio: <50 dB
Selectivity: -6/-60 dB 12/30 kHz
Audio output: at least 1.5 watts into 8 Ω

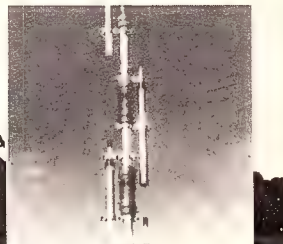
Transmitter:

RF output power: 1, 5 or 10 watts (into 50 Ω)
Modulation method: Variable reactance
Maximum deviation: \pm 5 kHz
Spurious emissions: at least 50 dB below carrier
Mic impedance: 2 K Ω

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Stop Press

A DX operation from Cocos/Keeling Islands, VK9Y, has been scheduled for March, and six metres has been promised with both operators and a beacon. More details on the 28.885 MHz net.

We were wrong

In a recent issue I criticised the non-appearance on six metres by **Brian Rous, C21BR**, who had been supplied with transmitting equipment by a group from Brisbane. I printed comments by sources who claimed to know what Brian was up to and I suggested his lack of activity may be due to a preoccupation with HF.

These statements were, as it turned out, completely incorrect, and Brian has assured me that he has taken great pains to activate the equipment loaned to him, to the point of requesting a new residence in a more favorable position on Nauru Island.

The item about Nauru was based on input from Peter VK4APG, Shel NI6E, Jack VK2GJH, as well as my own observations from the VK3PA 15 metre net and from Japan on 10 metres and in the JA1VOK newsletter. All were at a loss to explain the absence of C21 on the air and the material available lead me to incorrectly assume that it was not the propagation preventing C21BR from appearing in our logbooks. This could not be further from the truth, as Brian, when contacted by landline, instantly hung up after a phone call and began operating on 50.095 MHz when alerted to the fact that his beacon was being heard in Japan.

Brian has pointed out to me that an island which is eight kilometres in diameter is a very small target for a six metre signal and you could quite possibly get only one shot at working it in each opening. So Brian, a big thank you from this column and a personal apology from me for my mistake. Please continue to operate and don't judge all

of the six operators by the antics of an over-anxious few. Our aim is to promote six metre activity, not scare people away!

QSLs for T3ØJH

The correct callsign for T3ØJH is VK2GJH, PO Box 299, Ryde, New South Wales.

European Wrap up

Messages from VK6RO and VK6ZRY carried news about reception of European signals on February 5, when G3HBR was heard by VK6RO and again the next evening at 1242z, when both G and PA were contacted. VK2QF confirmed that he had three openings to Europe from Mudgee NSW occurring on January 13, when he made contact with OH2TI at Helsinki University, an extensive opening on February 8, when Italy and Yugoslavia were in, and later the same day into Denmark and Finland.

The latest report from Neville tells of contacts into YU again on February 12, when he logged YU3OV and YU3ES at around 1100z. It is interesting to compare the events of February 1991 and 1992 from Eastern Australia where, on examination, predictions have actually come true!

The following shows the countries which were available for those fortunate to have been in the target zone for the propagation:

5/2/91: 1022z SM, OH, LA, OZ, G3.

5/2/92: 1000z SM, OH, LA, G3.

8/2/91: 0913z DL, G3, ON, PA, SM, OZ, GJ4, OH until 1104z.

8/2/92: 0740z DL, OK, ON, PA, SM, OZ, GJ4, OH until 1105z.

There appears to have been a coincidence in the events on both days in both years, however due to heightened awareness and a proliferation of packets sent out to the UK Six Metre Group in late January, the lengthy opening on February 8 produced many more contacts between European and Australian call areas. In addition, paths were observed and stations were also worked on February 15, 17, 18 and 19. A by no means exhaustive list shows that VK2QF, VK2VC, VK2FLR were amongst the notable contacts made from New South Wales, with Neville scoring QSOs with YU3EA and YU3JV (JN76), YU3ZV (JN86), IK2GSO (JN45) and IK1EGC near France in JN35.

G4UPS heard (but did not make contact with) VK2VC in Sydney and David VK2BA, worked OZ4VV in Denmark, located in grid square JO46. VK2QF and VK2BBR both featured in the reports over 28.885 MHz but no VK4 areas — this was to occur several evenings later. Neville VK2QF, had a further extension into Scandinavia after 1100z and worked OZ4VV (JO46), OH3XA (KP01), OH2BC (KP11) (OH2AUK), OZ1BVJ (JO45) and OH2TI (KP20). His final contact for the evening was with the brothers ON4ANT/ON4GG in JO20bu.

From South Australia, I could hear VK5DX, VK5NY working Europeans on SSB and was informed that VK5RO, VK5EME, VK5ZDR, VK5ZRO, VK5KK, VK5ZBK and VK5BC were able to confirm many contacts including one notable catch for VK5RO, when he worked GW3MFY, Bill in IO81fl, Mid Glamorgan, Wales — that's over 16,000 km.

VK6RO made one of the last contacts at 1315z amongst the throng of VK6 stations including VK6s ZRY, HK, KZ, AO, WD, SQ, KRC, ZFG, AKT, OD, ZPP, ABR, JKR, ZSB and JJ, who had propagation from 0600z to Hawaii at 59 both ways and then from 0800z Europe. Countries contacted were Sweden, Norway, Finland, Denmark, England, Ireland, Northern Ireland, Wales, Scotland and the Isle of Man. Also many call areas in Germany and prefixes in The Netherlands.

According to a report from VK6ZRY, stations from as far afield as Bunbury, 120 miles south of Perth, participated in this most spectacular of European paths. The Coronal Hole observed by the IPS caused the predicted geomagnetic storm which started the whole event and, as the TV carriers rose from the west, VK2 stations were heard coming back to the first European stations. This was at 0813z and by 1330z over 71 individual contacts were made with upward of 12 countries, with four new ones from Graham, VK6RO, bringing his total to 56.

David VK5KK finished his evening with 41 contacts and four new ones and VK3LK made several new contacts from Heywood (QF01). Prefixes into Victoria were OG1, OH1, OH2, OH3, SM6, SM7, SMØ, LA9, OZ1, OZ2, OZ3, OZ4, PA2, PA3, PA0, ON4, F6, OK1, OK2, GJ4, SK7, DK2, DK5, DL5, DK6, DL6, DL7, DJ9, DL9 and LX1, with VK3AMK, VK3AMZ, VK3AWY, VK3BDL,

VK3LK and VK3OT. DK8OK told me that the Germans have shifted around a lot the prefixes, so this did not necessarily indicate different geographic areas of the country. However, one call worked was DL7ARM, who told me he was in JO62, which is Berlin City near Poland. Countries over there are quite small in area and, if the path is extensive, you may contact stations in many of the grid squares pertaining to that country.

Propagation shifted from Australia to Asian regions and KG6UH/DU1 and KG6DX were both active around 1300z, and made many happy for a new country. 9H1CG was reported as working TF3T Iceland and Estonian stations were active after 1300z, appearing in at least one VK6 logbook. Conditions moved around from 0900z — one notable contact was with F6BSJ in France weakly heard on CW, followed by a couple of SWL reports over 10 metres from GJ4ICD and ON4GG some 30 minutes later. OH2BC was heard using his new 36-element stacked array (!!) working heaps of JAs from 1000z until the band faded out after 1100z. Grid squares contacted were JO89 and JO99 near Stockholm where SMØs DME, KAK and OGX were operating, SM7CMV from JO75 and Germans in JO53, 52, 51, 50 and JN59 and 58.

The Luxembourg stations were both in JO20 along with half of the Netherlands, whilst OZ4VV was operating from JO46 in the northern regions of Denmark. GJ4ICD was on from IN89 in the western hemisphere and is likely to be one of the longest contacts many east-coasters will ever make into Europe. VK8ZLX advised me that he had an extensive path into European areas near the southern coastal regions including OE5LLO, OE5CAW, plus Italy and Yugoslavia. Reports from February 1991 show that contacts were made on the 17, 19 and 20th days, with G4UPS, GW3MFY, 9H1CG and ZC4MK, in that order, from Victoria.

So far we have had openings on February 5, 8, 15, and 17 when stations made many two-way contacts, including PA, OZ, SM, DL and OH stations. Perth had conditions to Europe on February 5, 8, 17, 18, and 19 with additional contacts to GM, OH, SM, OZ and EI, whilst the band simply *never* closed in north-west VK6.

The 48.2526 MHz video signal from Stavanger, Norway was heard and re-

ported by ZL3TIC over 50 MHz on February 16. VK3LK then contacted SM6, Kungsbacka Sweden at 1045z, followed by VK3AMZ a few minutes later. DL8HCZ was heard calling on SSB and he hooked up with VK5EE and VK5NC in QF02, as did OZ4VV (JO46), who QSO'd the two Mt Gambier stations plus VK3LK.

Peter VK8ZLX and Geoff VK8GF worked a Swiss station under extremely difficult QRM conditions and VK3LK on 50.104 MHz was buried by PA2VST and OH5NQ both calling him at once. Ray contacted 22 different stations located in Sweden, Denmark, Finland, The Netherlands and Germany, with JO75, JO65, JO43, JO33, JO53, JO46 amongst the grid locations worked.

VK6PA, VK4DDC, VK3AMZ and the VK5 stations were all reported on the 28 MHz 'chat channel' as was Mike, UL7GCC/UM8, who ran a string of stations up on 50.123 MHz. VK7IK reported that it was frustrating to log stations from Europe but be unable to get any responses. He said PAØHIP was loud, as was OZ1BVW and a G4 station, but it is unknown if any two-ways took place. Shel, NI6E, had a path into VK4 and commented that some stations in Townsville were working along the Adriatic Coast into Italy and Yugoslavia, whilst VK4DDC had a path into England very early in the opening and later into Belgium.

A by no means exhaustive list includes the following participants at the European end. RA3TES, HB9AMZ, HB9SJV, LX1SI, YU3ZV, G4UPS, G4CCZ, GIØOTC, GM3WOJ, OZ1LO, OZ3ZW, OZ4VV, DJ4SO, DF5LO, DL8HCZ, OH5NQ, PA2VST, SK7NM, SM7CMV, DK2PR, DK9AS, DF7VX, ON4GG, PAØOOS, PAØERA, PA3EON, SM7FJE, SM6FHZ, SM6CKU, LA9BM and LA9ZV. February 16 produced additional paths from VK2 into the Adriatic, with VK2APG contacting Drago YU3ZV (JN86) and YU3OV (JN76), as did Nev VK2QF in Mudgee.

VK6PA and VK6JQ were reported as contacting in excess of 300 stations during their week-long propagation into most areas of Europe, including some of the rarer ones as VK6PA lists mentions below. A brief note from Steve reported contacts on February 5 with ON4GG, G7EXO, GJ4ICD, OZ1BVW, GW3MFY, PAØHIP, F1FKI, OK1DIG, DL8HCZ, ES5PC for the first to Aus-

tralia from Estonia, SM6CKU and OH2LQO, all in 30 minutes of operating. Other notable contacts from this day included VK8ZLX to ON4GG, VS6BG to IK2GSO, UL7GCC (MN83) to many parts of Europe and G3WOS and G4CVI heard in VK8 along with CU1EZ who, unfortunately, could not be alerted by either VK8ZLX or VK8GF.

VK5NY was reported as working G3SED, SM7AED and VK5RO was heard by LA9ZV. Another European path occurred on February 18, when at around 0800z TV signals on 48.2398, 48.2402, 48.2482, 48.2496, 48.2610, 49.7406, 49.7418, 49.7516, 49.760, 49.7604 and 49.7610 MHz, were all audible at great strength. VK3AMZ was heard working PA and SM7, OZ8RW was on 50.098 at 559 and DK2ZF called CQ for over five minutes with no takers on 50.100 MHz!

OH2BC was in at S7 working VK3AMZ and Ray VK3LK worked CW on 50.104 MHz CW. SM7AED from JN65, DK2ZF (JO43), OZ8RW (JO46), PAØOOS (JO21) and OH2BC (KP20), were all audible in the 30 minute opening. The TV signals lasted until after 1000z, however the 50 MHz paths closed off around 0950z from eastern Australia, although it extended from central Australia allowing VK8ZLX, VK6PA and VK6JQ to feature in the results.

More Auroral A radio aurora was noticed from 0500z on February 21 by VK5LP at Meningie, and contacts were made from VK3 and VK5 to VK5 and VK7 regions up to 1000z, when an extensive E-layer path occurred to VK6 from VK3 and VK5 allowing contacts of over an hour's duration to take place. The VK6RPH beacon was heard from Perth and the VK3SIX beacon heard in Perth by Don VK6HK. The Tasmanian beacons from Hobart and Launceston were 559 and VK7AD made the first auroral contact with VK3LK around 0740z, whilst VK6JKR was heard in contact with an Adelaide station about 1000z. VK6JKR, VK6ZRY and VK6HK worked VK5LP, VK5BC, VK5ZBK and VK3OT, and it was hoped by all that this was a prelude to another fine opening to Europe. The previous Aurora on February 3 led to contacts on February 5 with European amateur stations.

A report from Jersey

The January report from the UK6MG shows that KP2A, HC1BI, NP4NP, KP4A, P43FM, KP4EIT, W1, 2, 3 and 4 and

KM1E/C6A were all worked at good signal strength in the UK. This followed a huge opening to K5UR (EM35), W7CI (DM41), C6A (FL16), OK2PZW, OK1DIG (JO70), YN3CC (EK62), W5OZI (EM00) plus W4, WØ, W6 and other W5 and W7 areas. Lithuania (LY2WR) and Estonia (ES5MC) were both listed in the European tallies but, apart from one VK6 QSO, these stations have not been heard down under.

Other stations appearing in the report are 9L1SL/B, FY7/B, PJ9EE, TI2NA/HL, a new station CN8BA (IM63), ZS6WB, YV4AB, VE1, VE3, W1, W2, W3, W4, W5, W8, W9 and WØ all from North America.

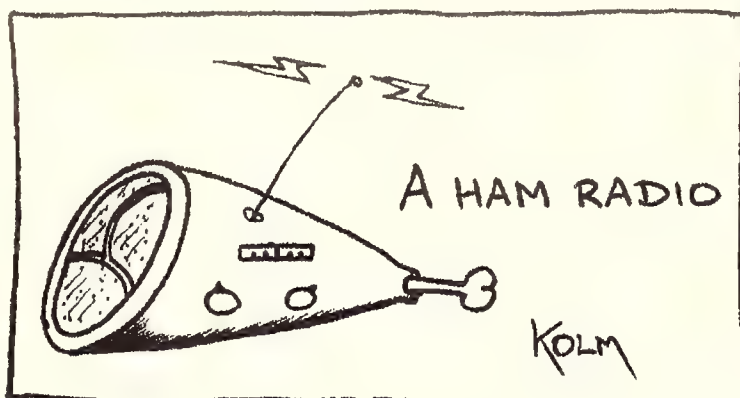
Thanks to GJ4ICD for this report.

QRV on six...

- During the opening on February 15, Joel KG6DX, worked nine German stations, 23 French, two in Austria, one YU, one ON and LX1SI for a country total of 99 worked. HB9SJV was the last country worked, but he missed OK2ZZ for number 100.
- Shel NI6E announced six metre propagation to VK6PA and VK6JJ on February 12 at 0700z, and on subsequent days, more openings to VK2, VK4 and VK6 areas. He reported the VK3SIX beacon for up to two hours on February 17 and 18 at 0700z. KG6UH/DU1 said he worked over 50 stations in general European countries.
- VK6RO reported 48 MHz TV signals at 0800z followed by reception of GJ4ICD at 1135z and contacts with Belgium and England at 1200z, also on Feb 12.
- RA3TES is in grid LO15jw, about 100 miles east of Moscow and is operating on six.
- G3HBR worked VK4FP, VK4JH and VK6JJ on Feb 12, after 1200z.
- Mike UL7GCC will be operating from UM8 Kirghiz during March.
- Peter VK8ZLX worked GJ4, ON4, PA, DL, F1, and OE during a mid-evening opening.
- IK1GNW mounted a DXpedition as 9M8NW and 9M3MW Malaysia during late February.
- V85BP is an English expatriate who will operate for two years from Brunei. He was heard on 28.885 MHz liaising with GM3WOJ on Sunday Feb 15 and

has six metre equipment.

- 5B4YH is active from Cyprus and worked into other European areas during late February.
- T3ØQQ was a JA expedition to Tarawa which also activated T2Ø Funafuti in February.
- FOØCI is the callsign of the Clipperton DXpedition scheduled from March 6 to March 13 and may be extended to 15 by N7QQ, who was worked Martime mobile on February 28.
- 42.400 MHz is a meteor data transmitter in Anchorage, Alaska and runs 2.5 kW to a large array in grid square BP41.



- 40.690 MHz is the Department of Interior 2.5 kW meteor burst transmitter located at 61.09° North and 144.46° East, and runs a 9 dB gain Yagi and 2.5 kW output.
- 46.900 MHz is an airforce burst transmitter system in the USA.
- LU7DZ requires a 5722 diode and socket for a noise generator; please send as a parcel marked 'gift only' to Eduardo Van Ooteghem, Drago 2524, Villa Adlena 1607, Buenos Aires, Argentina.
- KH4AE, Art has vacated Midway and, together with the KH7, both these countries may be deleted in July this year approximately.
- KD7P/KH7 Kure managed to work KH6, USA, VK and ZL in late Feb, including contacts with Alaska and Brazil on February 18, his last day on air.
- T3ØBY was reported as working W7 regions recently, cards go to Retita Neemia, PO Box 34, Bairiki, Tarawa, Republic of Kiribati.
- T3ØQQ worked NH6LT/QRP on February 12 for their first DX contact.
- C21BR worked into Japan from 0100z on February 9 on 50.090 MHz, a beacon frequency.

- EKØJA is active on Sundays only for meteor scatter from 1800 to 2200z. He worked JHØHCP and others via M/S on Feb 16 at 2100z.
- HB9CRQ reports that six metre activity from Switzerland is allowed only from 0000 to 0500z, however a HBØ recently worked KG6DX, VK8GF and VK8ZLX at 1100z. Oh well...
- YXØAL is the callsign of an Aves Island expedition for the CQ contest held on February 28.
- HL9TG has checked in on 28.885 MHz and should be operating on 50 MHz by now.

- VK5NC made a record-breaking contact to GJ4ICD during November 1991.
- VK4KK worked GJ4 (and possibly the other dependancy, GU3) during the European path on the 15th.
- The DX1HB beacon on 50.008 MHz is now active 24 hours.
- V73AT is keying on 50.036 MHz using a similar format and 24 hour operation. It was heard in Europe on February 17, which led to

two-way QSOs later.

- 9H1SIX is listed as operational using a frequency of 50.026 MHz.
- 9L1SL is the new callsign of the beacon which used to be 9L1US.
- Rare grids GI96, GG53 and GG55 were to be activated in February/March by various PY stations.
- VP8SSI is scheduled to operate from March 21 to April 4, 1992, in grid HD60 and will run a keyer on 50.117 MHz. QSL routes are via KA6V for CW, and AA6BB for SSB. Look in the 1992 US Callbook for their addresses.
- NL7OW worked a number of VK stations on January 7 around 0130z.
- KL7NO contacted KD7P/NH7 and PP5WL on February 18 around 0100z. KG6UH/DU1 reported openings to YU3 on December 17, OH and ON Jan 1 and DL Jan 3.
- YS1YS will be the new callsign emanating from a new beacon on six metres soon.
- Ivory Coast has operators active in IJ75 (TU2EW), IJ76 (TU2OJ), IJ77 (TU2MA) and IJ77 (TU4DH). QSL via Jean Claude Richard, BP 584, Bouake, RCI, Ivory Coast.
- VE1MQ is running a beacon on 50.088

MHz in grid square FN65.

- VK7RSB is now running 100 watts to a 5-element Yagi beaming USA on 50.057 MHz.

- VE6 six metre operators are planning to establish a beacon to operate on 50.033 MHz.

- ZL3MHF is operating successfully on 50.043 MHz but 50.052 MHz in Graymouth is QRT.

- VK3SIX was reported on two days in late February for lengthy periods by NI6E, who also worked VK6 stations in Broome and Karatha.

- A new VK6 state record will be claimed for a contact between VK6KRC and KN5S. Also Nev, VK2QF, has lodged his application for the 20,000 km contact with CU3 and Mike, VK2FLR will probably exceed the Japanese **world record** of 20,500 km.

- According to an ARRL DX Bulletin, the Clipperton DXpedition has had a person withdrawn from the team and the whole enterprise is now under threat of termination.

Symposium

The **Central States VHF Society** will hold the first worldwide VHF Ionospheric Propagation Symposium in Kerrville, Texas from July 16 to July 19, 1992. It will devote much of the time to study and dissemination of informa-

tion which relates to 50 MHz ionospheric propagation. Those wishing to submit a paper at this symposium should send an abstract to N5JHV, 5611 Desert Star Road, Las Cruces, New Mexico 88005, USA.

A DXpedition by N6AMG

Joel Paladino, N6AMG, took a truckload equipment to Africa last year including two metre EME gear using a Kenwood TR-751A, two 170 watt *rf* Concepts PAs, combined with four 8-element K6MYC Yagis. Here are some of his notes:

Results from CN8

The DX totals on six metres were as follows: country total 56, approximate QSO total 900; States total unknown. The DX totals on two metres were as follows: Country total was 6; States total was 14; the QSO totals were 20

I suspect that the six metre expedition was only about 50 per cent successful due to the lack of WØ, W7 or W6 contacts. The most significant contact was with ZL for the **first-ever** ZL to Africa contact. Also, working VK2QF was interesting as well. There were two beacons heard from FR and HC8 with no stations worked. JWØA was worked but we suspect it may have been a bootlegger.

Results from CU3

On November 24, 1991 I worked some VK2s in the Sydney area. The location was good from about 60° to 240° through the north. I actually could hear the 9L and ZD8 beacons *through* those hills! I was about 600 feet above the sea and about three miles inland. There was no power-line noise at all and almost no extraneous signals from 45 to 60 MHz. The DX results were 11 contacts on six metres with five countries and eight contacts on two metres with three countries. I guess you might say that the propagation was about as good as two metres...

I worked VK2QF again, and VK2BA for the **first-ever** VK2 to CU contact. Ironically enough, they were the two guys who met me at Sydney airport and helped me with my layover on the way to VK9L in spring of 1990. In my three weeks in CN this year I had the pleasure of listening to a station on a variety of calls. These calls were K7KV, W1AO, K4OV, KN4OV. Neither W1AO nor KN4OV are in the callbook. Further, K4OV is not even on six metres! After that deduction, a variety of people in Europe read me their logs. G4UPS noted that he worked W1AMG (another bootlegger) at 1422z and then at 1432z reported working W1AO, K7KV and a VO1 in June 1989.

73 from Joel N6AMG.



KA6SS0

Ralph Plummer

6552 Thomas Drive

No. Highlands, California 95660 • Sacramento County, California

10-10 50170

That's the lot for this month. Thanks to all this month's sources, including the **NI6E/KA3B** Newsletter, the **UK Six Metre Group** Six Metre News, the **ARRL** and **QST**, the **Kanto Rollcall**, **C21BR**, **JA1-VOK**, **JA8RC**, **JH1WHS**, **KG6DX**, **KG6UH/DU1**, **N6AMG**, **VK2QF**, **VK3-AKK**, **VK3AMK**, **VK3LK**, **VK5NC**, **VK4APG**, **VK4-BRG**, **VK4DDC**, **VK5LP**, **VK6HK**, **VK6RO/VK6ZRY**, **VK7IK**, **VK8ZLX** and **WA6BYA**.

73 from Steve, VK3OT (QF12 Victoria). Remember to listen out for VK3SIX at QF02 on 50.053 MHz. You can send your six metre news via packet to VK3OT@VK3JAV or via fax to (055) 71 2222.

Six metre European operator addresses

DF5LO	Klaus Dieter Behrndt, Bosserstrasse 8, D-2301, Westernsee, Germany
DF7VX	Hellmuth Fischer, am Holtsaut 2, D-4799, Borchten, Germany
DJ2PL	Hermann Geib, Waldstrasse 12, D-6534 Stromberg, Germany
DJ4SO	Ortwin Lammers, Steinstrasse 18, D-2300, Kiel 1, Germany
DK2PR	Peter Block, Grasdorf 80, D-2802, Otterberg, Germany
DK8OK	Nils Schiffhauer, Willem-Henze-Weg 12, D-3167 Burgdorf, Germany
DL8HCZ	Joachim Kraft, Grutmuhlenweg 23, D-2000, Hamburg 63, Germany
DL9AAK	Gerd Ohlendprf, 3361 Badenhhausen, Thuringer Strasse 28, Germany
F6BSJ	J.M. Maublanc, 28 Rue de Norvege, 71710 Montcenis, France
F6CER	Georges Ricaud, 34 Ave de La Gare, 77310 St Fargean, France
FC1BUU	J-C I Paillaugue, 8 place des Fauvettes, 33270 Floirac, France
FC1OIH	Vincent Lecler, 18 Rue des Marnerons, 28210 Fonville, France
IK1EGC	Gattolin Daniele, via Brunetta 3, 10040 Drueneto, Torino, Italy
IK2GSO	Colombo Enrico, via Esculapio 9/c, 20030 Seveso, Milano, Italy
LA9ZV	Leif H Johansen, Box 448-1501 Moss, Norway
OG1ZAA	Jan Hubach, Box 1, SF-28881, Pori, Finland
OH1YP	Jen Erik Strandell, SF-25840 Nivelax, Finland (Note: CBA QTH incorrect)
OH2BUW	Jarmo Rauta, Kaapakatu 7 B 48, 04260 Kerava, Finland
OH2TI	Helsinki University of Technology, Radio Club PRK, Dipoli, SF02150 Espoo
OH3MMM	Seppo Sisatto, Lansirinteenk 23, 33400 Tampere, Finland
OH5NQ	Peter Tigerstedt, Bjornviksv 6, SF-2110, Esbo, Finland
ON1CDQ	Geert, Now ON4GG via ON4ANT
ON4ANT	Johan Van De Velde, Resedastraat 5, 1770 Liedekerke, BT Belgium
ON4GG	Geert via ON4ANT
OZ1BVW	Birger Jensen, Ingridsvvej 57, 6000 Kolding, Denmark
OZ1DJJ	Bo G Christensen, Biens Alle 2, st th, DK-2300 KBH S Denmark
OZ1LO	Leif Ottosen, Bankevejen 12, DK-4750 KONG, Lundy, Denmark
OZ3ZW	Torben Joergen Anderson, Maagevej 12, DK-4930, Maribo, Denmark
P43FM	via PAØFM, SJ Heeringa, Vroenhofstraat 48, 6191 HE Beek, The Netherlands
PA2HJS	Henk J Schanssema, Dorpstraat 35, 6456 AA, Bingelrade, The Netherlands
PA3BFM	Frank E van Dijk, Middellaan 24, 3721 PH, Bilthoven, The Netherlands
PA3ECU	R Attema, Gildenburg 232, 7423 ZD, Deventer, The Netherlands
PAØHIP	Willem Morsink, Oostendestraat 37, 4826 KM, Breda, The Netherlands
PAØLSB	Jos Mols, Grutterijstraat 13, 5109TD 's-Gravenmoer, The Netherlands
PAØOOS	JC van Oosten, Oosterseweg 50, 9785TB-Zuidwolde, The Netherlands
PAØRDY	Robert Dijkstra, Het Breed 875, 1025 JE, Amsetrdam, The Netherlands
PA...	QSL Bureau, PO Box 300, Arnhem, 6800 AH, The Netherlands
PE1LCH	via PO Box 330, 6800 AH Arnhem, The Netherlands
SM6CKU	Bengt-Arne Jockert, Allatorp 1446, S-430 33, Fjaras, Sweden
SM6CMU	Ingemar Olsson, Krokvagen 4, S-434 92, Kungsbacka, Sweden
SM6DER	Sten Wahlskog, Ostanvindsgatan 69, S-434 00, Kungsbacka, Sweden
SM7AED	Arne Nilsson, Trumslagaregatan 3, S-231 00 Trelleborg, Sweden
SM7FJE	Bo Nilsson, Grevie 22, S235-94, Villinge, Sweden
SM7SCJ	Richard Jacob, Bronnestad 9, S-230 20, Klagstorp, Sweden
SMØKAK	Lasse Melin, Platavagen 18, S-191 50, Sollentuna, Sweden
YU3ES	Stan Jeric, Vena Piona 4, 66000 Koper, Slovenia
YU3IT	Milan Casar, 69206 Krizevci 47, Prekmurje, Yugoslavia
YU3UGY	Graziella Jeric, as for YU3IT
YU3ZU	Karal Turin, as for YU3ZW
YU3ZV	Drago Turin, Police 38a, 69250 Gorna Radgona, Slovenija, Yugoslavia
YU3ZW	Drago and Karla (YU3ZU) Turin, Cvetlicna 18a, 62270 Ormoz, Yugoslavia



In my last column, the first written in 1992, I made a couple of references to amateur radio and my feeling of disquiet about certain current matters. At the back of my mind I had two issues running around; one was the fact that certain ZA1 QSL cards were not being accepted at ARRL for DXCC credit. The other issue was to do with Bougainville, an Australian radio amateur and the projected use of the amateur bands — on supposed humanitarian grounds.

Now that the matter of the QSL cards for ZA1QA, ZA1HA and ZA1DX has been resolved and these cards are now okay at DXCC, I feel slightly easier in my mind. Of course many said that ZA1QA was in Albania, it appeared that some sort of license *was* in place, so *there* ARRL and DXCC! Well, such an attitude is, of course, understandable but unfortunately (or otherwise, depending on your point of view) ARRL DXCC is the only truly international measure of DX standing. Mostly, one has to join the club, abide by the rules and grin and bear it, even if there is something with which one does not agree.

These days things are changing — ARRL DXCC is *much* too international in make up and it has to be seen to be non-political (in an amateur radio sense), fair and capable of reasonable judgements.

In my view Albania was far too important to the radio amateurs of the world for it to be tainted with so many of the ills of the hobby today. Without steady pressure the decision that ZA1s QA, HA and DX were 'no good' for DXCC would have stuck. We even have one of the operators of ZA1A passing his views on the Hungarian operators in QST for January 1992! However (thankfully) common sense has prevailed and finally an attempt was made to determine the legality of ZA1s QA, HA and DX. Having seen copies of both

the ZA1A license (later amended) and the ZA1QA license, both seemed perfectly valid to me. I really disliked the way that the Hungarian efforts had been dumped in the name of ZA1A...

Now, to return to the 'Bougainville Affair' for a moment...

The many unsavory edges to this sordid operation, in the name of amateur radio, in the name of humanitarian activities and sense of a cause, is a matter for one's own perception. However, when the same situation starts the idea of Bougainville being a new country, thus appealing to the DXer (two for the price of one — Humanity and DXCC) then I get miffed. Introducing amateur radio to certain locals in Bougainville, who then ask for \$5.00 for a QSL card — and as a donation for other material — is utterly despicable.

Time and time again, radio amateurs have proven themselves able to provide a major humanitarian factor in time of need and disaster. However we all seem to be aware that shortly after the event we all become radio amateurs again. I may be quite wrong, and correct me if I am, but I have *never* heard amateur radio used to specifically describe 'foreign' military action against locals. Yet this was done on several occasions from Bougainville.

It seems that, generally, the radio amateur has proved willing to abide by certain basic tenets. The need for a valid radio license, the use of a valid call sign, the avoidance of all matters political (and I *mean* political) and a modicum of respect for the amateur radio bands, control how we get our frequency allocations and how the licensing system works. On *every single one* of these counts the Bougainville Affair fails the acid test.

I can see *no* justification for an affair which brings amateur radio into disrepute, and which straddles the efforts of three governments to bring a solution to what has been a very difficult problem in the last couple of years or so.

Perhaps more to the point, a complete lack of understanding of ITU, IARU, the role of individual governments, via their Communications Ministries, to administer our precious frequency allocations. Allocations retained because we have shown ourselves to be very responsible in the use of our privileges...

Compiled by Jim Smith, VK9NS

PO Box 90, Norfolk Island, South Pacific 2899

Cocos (Keeling) Is VK9Y

I recently received a newspaper clipping which reported that the estate of Clunies Ross on Home Island was on the market. The use of the Clunies Ross facilities on Home Island had enabled several DXpeditions to take place in recent years. Apart from amateur radio, the sale of this property will mark the end of a 150-year saga in the history of this beautiful atoll.

Using the newly-allocated VK9C prefix for Cocos (Keeling), Claudia, F1NYQ/HB9CUY and Fritz, F6IMS/OE6FOG, plan to operate from West Island from March 17 to April 6 on all bands, all modes including six metres.

Claudia will sign VK9CL and Fritz will sign VK9CK.

QSL Route is: **F6IMS** direct or via the REF.

Note also that it is reported that all outstanding **VK9YJ** QSL cards have been dealt with — the manager for VK9YJ is **VK3AWY**.

Christmas Island VK9X

The scheduled DXpedition to Christmas Island started on time and, as I write this, has a couple more days to run.

Both Lanny, VK9XM and Bob, VK9XN have been very active on SSB, CW and RTTY.

QSL Routes:

VK9XM Lanny, **W5BOS** direct or via bureau. NB use the W5 QSL bureau.

VK9XN Bob, **W5KNE** direct or via bureau. NB use the W5 QSL bureau.

Iran EP/HA5BUS

According to DXCC, documentation has been received from the Hungarian Globex Foundation for its recent activity from Tehran, Iran. Some 11,500 QSO were made, signing EP/HA5BUS and it remains to be seen if their documentation is okay for DXCC credit. I, for one, hope it is!

Note also that the Hungarian group has also been operating from India, signing VU/HA5BUS. This is a *very* hard place for a foreigner to get licensing. It has also applied for permission to operate from Bangladesh.

QSL Route:

Globex Foundation,
PO Box 49,
1311 Budapest,
Hungary.

Aves Island YXØ

The scheduled operation from Aves Island by the YV DX Club went ahead and signed YXØAI. The group started at the end of February and operated until the March 4. SSB and CW operation dominated. With a total of 20 operators, there was plenty of activity and it should have given the needy this DXCC country.

QSL Routes:

SSB QSOs:

ARV,

PO Box 3636,
Caracas,
Venezuela

CW QSOs:

YV DX Club,

PO Box 75458,
Caracas 1070-A,
Venezuela

Clipperton Island FOØ

The landing permit and license, FOØCI, allowed the group permission to land and operate from the island. They planned a seven-day operation, with four stations active round the clock. Operation was expected to start around March 7.

Nine operators WA2FIJ, NØAFW, KA7CQQ, N7QQ, KC6WUZ, N9NS, ON6TT, PA3DUU and GØMLX were all committed to go.

South Sandwich VP8

In a telephone call yesterday, one of the organisers for this DXpedition said that things are still on 'go'. However they had to meet an important deadline and payment of over \$36,000 to complete the financial commitments for the vessel, and this was due by the first week of March. They were still short by some \$10,000.

The operation, scheduled for two weeks, will take place from Thule Island on all modes and bands. Tentative starting date is around March 18-21. The group will operate /MM on route from Port Stanley.

Operators are now given as Mas, JE3MAS; Martti, OH2BH; Tony, WA2JQS; Ralph, KØIR; John, W7KNT; Al, WA3YVN; Terry, W6MKB and David, KJ9I.

The DXers of the world wish them a safe journey and a successful DXpedition.

QSL Routes:

SSB QSOs

AA6BB/7

CW/RTTY QSOs

KA6V/7

Qatar

A7

It is reported that Chris, SP5EXA will move to Doha, Qatar in March and he has been promised an A7 license. With a three year stint in the country, Chris should make this country readily-available. Chris is a member of FOC, so expect plenty of CW activity.

QSL Route: K2TQC.

(Note this requires final confirmation.)

Tromelin

FR/T

For those still needing Tromelin, it is reported that Tromelin will be active from late March until the end of May. The operations are to be as follows: FR5ZU/T: Late March — April 10
FR5AI/T: all of May.

Note FR5ZU prefers Net operation and Yoland often drops the /T to reduce the pile-up. Interesting approach!...

APO/FPO Zip Codes

Changes have been made in the US Zip Codes used to identify military addresses and these changes have been in place for some time. We have long been used to APO and FPO. To replace the previous designators of APO San Francisco, APO New York, and so on, three new designators, **AA, AE** and **AP** have been introduced.

AA is the new designator for Zip 340; the Americas except continental USA and Canada.

AE is the new designator for Zip 090-098; Europe, Middle East, Africa and Atlantic/Mediterranean ships.

AP is the new designator for 962-966; Korea, Japan, Philippines, other Pacific areas and Alaska and Pacific/Indian ocean ships.

So expect addresses to read APO AE 09081 for example.

Ogasawara

JD

There was a lot of activity during February from JD1, Ogasawara Island by several JA operators all signing own call/JD1, with operation mainly on CW.

QSL Routes:

For all the following operators, via home calls:

J11EFP/JD1, JK1TNN/JD1, JL1EUP/JD1, JQ1NGT/JD1, JE7LHT/JD1.

Mount Athos

SY

In a move to squelch current speculation that the DJ6SI/SY operation was again up for discussion, Chuck, K8CH, membership services manager for ARRL HQ has stated the following: "ACCEPTANCE OF THIS OPERATION IS NOT CURRENTLY BEING RECONSIDERED."

Several other points were made, including that fact that RAAG had been approached to clarify the meaning of 'local authority' etc. However, the statement by Chuck now seems to be the bottom line of this affair.

Myanmar

XYØRR

It is reported that many DXers are now receiving their XYØRR QSL cards in the mail, so let us also hope that this area is also being taken care of. I have a sample of the QSL card and it is very very nice. Be patient.

RSGB DX News Sheet

For some 30 years the RSGB's DX News Sheet has provided DX information for many. Started by **Geoff Watts**, of IOTA fame, it quickly became one of the most authoritative of the DX outlets. It is a tough task out there, as the amateur radio bands abound with rumors and counter-rumors. I was at one time very active as G3HSR and in the early '60s used to feed Geoff with my DX information.

That the DX News Sheet, now under the wing of the RSGB, published issue 1500 on January 22, 1992, must be a milestone of DXing history and congratulations is certainly due.

Congratulations is also due to Long Skip, the Canadian DX publication also celebrating 30 years of publication.

Liberia

EL

The report that Dwight, EL2W is active and has been on the WARC bands is very interesting as it has been some time since EL stations have been on the air. Let us hope that Dwight is genuine.

QSL Route:

PO Box 192,
Monrovia,
Liberia.

Niger

5U

JH4NMT is reported active as 5U7M on CW and SSB.

QSL Route:

via JARL

5U7M has been reported active on CW.
QSL Route: via WF4A

Clipperton DX Club

The callsign FFØXX is the callsign allocated to the Clipperton DX Club and the call is used on a rotation basis by its members.

QSL Route: Via REF
or
CDXC,
PO Box 4,
28111 Luce Cedex,
France.

Baker & Howland Is KH1

It is reported that a DXpedition is being planned for Baker and Howland later this year. It some time since the HIDXA activity as NO1Z/KH1 and VK9NL/KH1 and it certainly was an interesting trip.

As soon as I have something definite, the information will be passed on.

Lord Howe Island VK9L

Two operators have been active from this super spot — Chuck as VK9LW and Kit as VK9LZ.

QSL Route: WIØS both stations

Kure Island KH7

Bob Winters has been active from Kure Island signing KD7P/NH7. He has been operating lots of CW/RTTY and has also been very active on the WARC bands.

Note that the US Coastguard operations on Kure Island are now scheduled to close down on June 30, 1992. It may then be almost impossible to get permission to visit the island, since it is registered as a protected bird sanctuary. We can expect Kure to get quite rare in due course.

QSL Route:
KD7P,
PO Box 8265,
NCWP,
MOU 3 Guam,
Dedeo GU 96912
USA

South Orkney VP8

It is reported that VP8CFM now has RTTY gear and hopes to be active soon on this mode. He is QRV daily on 20 metres SSB on 14,156 kHz at 1930z.

QSL Route: **GM4KLO**

Iraq

Roger, G1WAG will be active from YI1BGD during March and this may be a good chance to get a QSO and a QSL card. It has sometimes been quite difficult to get YI confirmed. The manager, GØMMI can also QSL for contacts with Roger made in the past couple of years (see below).

QSL Route:
(For Roger, G1WAG only)
GØMMI

Use GØMMI for QSOs with Roger as follows:

22 October, 1989
2-8 February, 1990
30 March, 1990
1-12 April, 1990
12-21 June, 1990

Franz Josef Land 4K2

Valery, 4K2C has now started RTTY and Amtor operation from FJ Land. Valery is involved in measuring the Ozone Layer above Franz Josef Land. 4K2OLP is also active from FL Land.

QSL Route: **RA10A**

DXCC

News from DXCC includes the release authorising the acceptance of the ZA1QA, HA and DX QSL cards for DXCC credit.

The statement is badly written, and again pushes the line that the Hungarian licenses were issued by an authority other than PTT. The statement repeated the claim that PTT had a special relationship with the ITU and IARU. (This was the group which made over 70,000 QSOs, as ZA1A, in the name of the introduction of amateur radio to Albania.)

Finally, the release also stated that, 'in future, the ARRL DXCC Desk will only accredit those operations approved by Albanian PTT' ...thus setting itself up for further confrontation.

If the Ministry of Culture, Youth and Sports is okay to issue ZA1QA, ZA1HA and ZA1DX — which are now acceptable at DXCC — what changes their status and authority tomorrow??

Due to a large number of DXCC submissions, the backlog at DXCC is now two months for new applications and three months for endorsements.

YI

QSL Bureaus

Note that the USSR QSL Bureau — PO Box 88, Moscow — will probably be defunct soon due to recent changes. Most of the countries will opt for their own bureau system and disband the centralised system which must have been a logistical nightmare.

Baltic QSL Bureau addresses are now as follows;

LY LMRD, PO Box 100, Vilnius, 2001 Lithuania.

YL LRAL, PO Box 164, Riga Center, 226098, Latvia.

ES ERAU, PO Box 125, Tallin, 200090 Estonia.

Okay that is about it for this time, and isn't it *amazing* where the time goes to! Hopefully, by the time you read this, VP8SSI from South Sandwich will be more or less a reality and we will all have our YAØRR and XYØRR cards in our hands. The bands are improving on 20 metres for the 14,222 kHz DX Net and, once again, European stations are taking part — it has been pretty lean lately...

To those who keep me informed on the band, by telephone (0011 6723 2437) and FAX (0015 6723 2259) many thanks. A special thanks is due to: Inside DX, QRZ DX., Les Bacoires DX, Long Island DX Bulletin, JA 59 Magazine, JA DX News, RSGB DX Newsletter, DXPress, W6GO/K6HHD Managers List, Lynx DX Bulletin, MDXN, and many more.

73 de Jim, VK9NS.

HELP!

Jim is looking for a little advice from someone. His Hills 70' wind-up tower recently broke its winch cable. While Hills presently has the item ex-stock, Jim would prefer to replace it with a stainless steel cable, stronger than the original and better able to withstand the salty island environment.

Does anybody out there have any suggestions for Jim? You can write to him at the address on page 56 or ring him on 0011 6723 2437.

60 — AMATEUR RADIO ACTION Vol. 14 No.12

forecaster Apr 1992

LEGEND TO SYMBOLS

- Propagation is *possible*, but unlikely at this time and frequency on more than half the days of the month.
- % This frequency / time pair should allow communications on between 50% and 90% of the month.
- F Your best bet — first 'F' mode conditions should apply on at least 90% of days this month for the given time and frequency.
- E Propagation via the 'E Layer' expected on up to 90% of days of the month at this time and frequency.
- P A fair mixture: up to 90% chance of a path using 'F Mode' and between 50% and 90% probability of an 'E Layer' path.
- B A good mixture: up to 90% chance of a path using either 'E Layer' or mixed 'F' modes.
- M A mixture of combined 'F' modes — both first and second mode up to 90% of the time.
- S Second 'F' mode conditions should apply on at least 90% of days this month for the given time and frequency.
- A High atmospheric absorption of the signal is likely — better to use a higher band. Too close to ALF for good HF signals.
- X A complex mixture of modes is likely to apply, and could possibly include the second 'E' mode.

West - England (short path)

28.5	..	.....	
24.9	..	.....	
21.2	..	.....	
18.1	%..	.....		
14.2	%%A	.....		
10.1	F	.....		
7.2		.....		
3.6		.....		
1.8		.....		
0.9		.....		
MHZ					
UT 00	06	12	18	24	

West - England (long path)

28.5	..	.....	
24.9	..	.....	
21.2	..	.....	
18.1	%..	.....		
14.2	F%%	.....		
10.1	A	.....		
7.2		.....		
3.6		.....		
1.8		.....		
0.9		.....		
MHZ					
UT 00	06	12	18	24	

West - central and east coast USA

28.5	..	.....	
24.9	%%	.....		
21.2	FF%	.....		
18.1	FFFF%	.....		
14.2	AA%%	.....		
10.1	FFFF	.....		
7.2	AFF	.....		
3.6	FF	.....		
1.8	FF	.....		
0.9	FF	.....		
MHZ					
UT 00	06	12	18	24	

West - west coast USA

28.5	FFFF%	.....		
24.9	FFFFF%	.....		
21.2	FFFFF%	.....		
18.1	FFFFF%	.....		
14.2	FFFFF%	.....		
10.1	FFFFF%	.....		
7.2	FFFFF%	.....		
3.6	FFFFF%	.....		
1.8	FFFFF%	.....		
0.9	FFFFF%	.....		
MHZ					
UT 00	06	12	18	24	

West - South America

28.5	..	.....	
24.9	%%	.....		
21.2	%%	.....		
18.1	%%	.....		
14.2	%%	.....		
10.1	A	.....		
7.2	FA	.....		
3.6	F	.....		
1.8	F	.....		
0.9	F	.....		
MHZ					
UT 00	06	12	18	24	

West - West Indies

28.5	%%	.....		
24.9	%%	.....		
21.2	%%	.....		
18.1	%%	.....		
14.2	%%	.....		
10.1	FFFF	.....		
7.2	FF	.....		
3.6	FF	.....		
1.8	FF	.....		
0.9	FF	.....		
MHZ					
UT 00	06	12	18	24	

West - Japan

28.5	MM	.....		
24.9	MM	.....		
21.2	MM	.....		
18.1	MM	.....		
14.2	MM	.....		
10.1	MM	.....		
7.2	MM	.....		
3.6	MM	.....		
1.8	MM	.....		
0.9	MM	.....		
MHZ					
UT 00	06	12	18	24	

West - Central Europe

28.5	..	.....	
24.9	..	.....	
21.2	..	.....	
18.1	..	.....	
14.2	%%	.....		
10.1	A	.....		
7.2	FA	.....		
3.6	F	.....		
1.8	F	.....		
0.9	F	.....		
MHZ					
UT 00	06	12	18	24	

West - Middle East

28.5	MM	.....		
24.9	MM	.....		
21.2	MM	.....		
18.1	MM	.....		
14.2	MM	.....		
10.1	M	.....		
7.2	MM	.....		
3.6	MM	.....		
1.8	MM	.....		
0.9	MM	.....		
MHZ					
UT 00	06	12	18	24	

West - North Africa

28.5	..	.....	
24.9	..	.....	
21.2	..	.....	
18.1	FF	.....		
14.2	FFFAA	.....		
10.1	F	.....		
7.2	FF	.....		
3.6	FF	.....		
1.8	FF	.....		
0.9	FF	.....		
MHZ					
UT 00	06	12	18	24	

West - West Africa (short path)

28.5	%%	.....		
24.9	FF%	.....		
21.2	FF%	.....		
18.1	FF%	.....		
14.2	FFFAA	.....		
10.1	F	.....		
7.2	A	.....		
3.6	FF	.....		
1.8	FF	.....		
0.9	FF	.....		
MHZ					
UT 00	06	12	18	24	

West - West Africa (long path)

28.5	%%	.....		
24.9	FF%	.....		
21.2	FF%	.....		
18.1	FF%	.....		
14.2	AA	.....		
10.1	A	.....		
7.2	FF	.....		
3.6	FF	.....		
1.8	FF	.....		
0.9	FF	.....		
MHZ					
UT 00	06	12	18	24	

West - South Africa

28.5	MM	.....		
24.9	MM	.....		
21.2	MM	.....		
18.1	MM	.....		
14.2	MM	.....		
10.1	MA	.....		
7.2	MM	.....		
3.6	MM	.....		
1.8	MM	.....		
0.9	MM	.....		
MHZ					
UT 00	06	12	18	24	

... CLASSIFIEDS ... CLASSIFIEDS ... CLASSIFIEDS ...

VK1 AREA

Kenwood TS-820S mint cond, little use since new, CW filter fitted \$850. **Emtron** EAT-1000A 1kW ATU, new cond \$380. Peter, VK1JI (06) 258 4757. Transmitting gear sold to licensed amateurs only.

Tandy DX-300 synth comm rcvr, VGC \$100 or near offer. Bob, (06) 281 2635 A/H (06) 246 5182 B/H

Wanted: Icom IC-720A in GC. Fred, VK1RY (06) 247 9886

Wanted: Kenwood TS-680S HF + 6M txvr any cond. Andrew/VK1AS (06) 291 9672

VK2 AREA

AEA 10M hand-held txvr. 2W input, SSB/CW loaded whip aerial, NiCd batts, four 50 kHz bands, VXO, manual, \$255 or swap for modern 10m mobile (with cash adj as necess). **Create** 50-990MHz 22-el Log Periodic with manual \$190. Also 10/11m 6-el log-Yagi \$190. **Emotator** rotator \$200. 50' **Hills** crank-up triangular lattice tower \$300. The aeriels & rotor are presently atop the tower. \$800 the lot, incl coax & rotor cables. *You* remove... Ed, VK2KS (02) 805 5573 B/H, (02) 878 3148 A/H

Commodore C-64, 1541 disk drive, MCS-810 col printer, col monitor 1802, mouse, joysticks, games, ribbons. \$880 or consider swap amateur gear. Adrian, VK2DZF (02) 899 1553

Complete station, less antenna: **Yaesu** FT-101E HF txvr, perfect. Dip meter Heathkit Dummy load, spare finals, RSGB/ARRL manuals plus others. Buyer to inspect & collect. \$1500 ono. VK2ELE (049) 84 1973. Transmitting gear sold to licensed amateurs only.

CW Key PMG 1941, WT-8 amp No.2. Best offer. Bill, (063) 73 8608

DECEASED ESTATE:

Kenwood TS-120S HF txvr, 100W match AT-200 ATU PS-

WANT TO BE AN AMATEUR RADIO OPERATOR?

The **Gippsland Gate Radio & Electronics Club** is running an AOC/NAOC class in Hallam, Victoria, starting April 22, 1992.

The course runs for 20 consecutive Wednesday nights, and all documentation is provided. Fees are \$78 plus mandatory club membership fee (\$20).

Call **Ian Jackson** on (03) 789 7339 to reserve a position.

30 pwr supply also TS-520 HF txvr. **Yaesu** FR-7 rxvr FT-2FB 2M tx all good working cond with manuals, mics. The lot \$1000. Les, VK2CLB (02) 997 1109. Licensed amateurs only.

Eimac sockets SK-800B, SK-810B for 4CX1000A, 4CX1500B tubes. **Vacuum caps** 500pF 15,000V 1000pF, 10,000V unused, taken out of equipt. **Also** change-over relay, 24VDC antenna, open frame 50K 70W bleed resistors, new out of equip. Ron, VK2DTR (02) 918 3835

Icom IC-725 HF txvr with FM/AM board \$1150. **MFJ** 949D ATU \$260. **Realistic** 2004 scanner \$400. All with orig pkg, all VGC. Ron (043) 96 6560. Transmitting gear sold to licensed amateurs only.

Icom station: IC-735 HF txvr, PS-55 pwr supp, AH-2A auto ATU, all brand new with manuals plus **ATN** 320MM & SSM triangle two-section tower. Everything worth \$4000, will sell for \$3200 ono. Ross, (043) 40 1909 A/H or (018) 29 4510 anytime. Licensed amateurs only.

Kenwood AT-200 ATU with handbook \$150; **Kenwood**

MC-50 mic \$80. 6146Bs & 12BY7s (Philips USA, GE respectively) \$80; LF-30A low pass filter \$50. Adrian, VK2DZF (02) 899 1553

Kenwood TS-120V HF txvr with VFO-120 VFO, linear noise-cancelling mic, mobile mount. All VGC. **Also** UHF swr meters. Offers. Phil, VK2KEV (066) 76 1671. Transmitting gear sold to licensed amateurs only.

Kenwood TS-520 HF txvr, **Icom** IC-R70 comms rxvr, HM-12 hand mic, dipole antenna 80/40/20, **Yaesu** ext spkr suit FT-101. All gear VGC. Tony, VK2XTJ (02) 708 2045 B/H. Transmitting gear sold to licensed amateurs only.

Kenwood TS-600 6M all-mode txvr in GC \$450 ono. **Yaesu** FL-2100B HF lin amp in as new cond \$600. Frank, VK2GA (02) 622 8159. Licensed amateurs only.

Kenwood TS-850S/AT HF txvr with auto ATU, new in carton \$2690 with warranty. **THP**-HC500 ATU \$250. **Siltronix** FS-1000A peak reading wattmeter \$195. **ETO** Alpha 87 linear amp, two Eimac 3CX800A7 ceramic

FRITZEL FD4 TRAPLESS MULTIBAND HF ANTENNA

This high performance, low visual impact antenna is now available ex-stock in Australia. ATU-less operation on 80,40,20,17,12, and 10m bands.

Just feed it with regular RG58 and listen!

Fits in most back yards! 500w PEP model. \$159.95

PROPOZ

Phone: (03) 583 7062

Box 172, Black Rock, VIC 3193

metal triodes \$8250. James, VK2DXM (02) 622 6268. Licensed amateurs only.

Swap **Yaesu** FT-707 mobile HF txvr with WARC bands (VGC) for **Kenwood** TS-830 (preference) or TS-530. Len, VK2EDQ (043) 32 4838. Licensed amateurs only.

Uniden President HR-2510 10m 25w all-mode txvr, purchased April '91, used as base station only, no mods, perf cond \$240. Hugh, VK2GOS (065) 54 8484. Licensed amateurs only.

Vintage Villiers 225cc motorcycle complete & ready for restoration, swap for HF txvr TS-830 or sim. (*Maybe I should hand this one on to our sister publication Australian Motorcycle News! Ed.*) Trevor, VK2MMT (067) 52 5406

Wanted: Aviation headset with boom mic. Tony, VK2XTJ (02) 708 2045 B/H

Wanted: Circuit diag for a Drake SSR-1 rxvr. Will pay all costs. Trevor, VK2MMT (067) 52 5406 or FAX (067) 52 2601

Wanted: Corona HP-150DX. VK2MD (02) 622 3037

Wanted: Icom IC-720A txvr in GC for reas price. Neil, VK2KRO (069) 22 5250

Wanted: Icom IC-1271 all-mode 23cm txvr. Nigel, VK2KJU (02) 621 8939

Wanted: To suit **Kenwood** TS-680S: need ATU (prefer auto eg AT-250) & pwr supply. Brad, VK2KQH (02) 906 5855 or (018) 64 0377

Wanted: Tower, Nally winch-up, tiltover 42' in GC. **Also** old Morse keys, bugs & paddles. Ian, VK2WR (02) 634 7210

Yaesu equipment: FP-700 20A pwr supply, FP-757GX 20A switch-mode power supply, FC-700 ATU, all A1 \$250 ea. Bruce, VK2BDX (049) 56 6387

Yaesu equipt: unused xmtr FL-101, xverters FTV-650B, FTV-250 monitor scope YO-100 dummy load YP-150 mic, YD-844 Osker standing

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wavemeter SWR-200 Atronic code reader CR-101. Best offers cons. (02) 922 7250. Transmitting gear sold to licensed amateurs only.

Yaesu FL-2100B HF lin amp, mint cond, one valve new, other unknown cond. With h'book \$400. Bargain! James, VK2AUP (02) 975 4363. Licensed amateurs only.

Yaesu FL-2100B HF linear in GC \$600. **Yaesu** YO-0301 monitor scope GC\$400. ono. Manuals included. Des, VK2AGA (065) 53 9607. Transmitting gear sold to licensed amateurs only.

Yaesu FT-101ZD mkIIA HF txvr EC. With orig pkg, h'bks, etc. Will sell with YD-148 desk mic, hand mic, Hi-Mound Morse key, spare finals. \$695 lan, VK2WR (02) 634 7210. Licensed amateurs only.

Yaesu FT-101ZD txvr & FV1-1DM dig VFO, mic, spare tubes, both manuals. Only \$800. VK2PQ (043) 84 3465. Licensed amateurs only.

VK3 AREA

Collins KW-M2A txvr plus 30LI linear amp all in EC incl inst books \$230 the lot.

Tower: Hills 90' galv telescopic crank-up tilt-over type comp with new cables etc. \$750. Can arrange freight dismantled. Rob, VK3JE (060) 37 1262 or (03) 584 5737. Transmitting gear sold to licensed amateurs only.

Dentron MLA-1200B linear amp \$350. **Kenwood** TS-600 all-mode 6M trvr \$325. 6LQ6 valves, four new \$100. 4-400A valves, two new \$200.

Henry 2K-4 console amp \$500, frequency listings 28-60 MHz posted \$5 **Subscriptions** to UK6MG newsletter Airmail posted \$30 PA. Steve, VK3OT (055) 72 3333. Transmitting gear sold to lic amateurs only.

Emtron EAT-300AATUVGC. Urgent & genuine reason for sale. \$180 ono. John, VK3KGP (03) 690 5641

QSL CARDS

QSL cards, white or colored, pre-printed or fully personalised with call sign, operator's name, QTH, station equipment, QSO panel, with or without logo. Top quality cards at best prices — eg. 200 fully-personalised cards for just \$38.40.

Send 90¢ stamp to **BINT Services**, PO Box 323, Cheltenham 3192 for samples and prices.

Garage sale of electronics eqpt: Computers, printers, mags, valve components, test equip, etc. Saturday 23rd May, 10 am. Doug Purton, VK3EFS, 43 Fairbairn Rd, Cranbourne 3977. Details on (059) 96 4353

Heil HM 10 mic new in box to suit Icom \$150. John, VK3JD (03) 645 2695

HyGain 203BA full size 3-el 20M Yagi \$195. **Apple** 11e with two floppy drives, Silentype printer, monitor & nine cards. PAL video, Digitek, Ramcard, Micro-works DS-65, Microsoft Z80, Timemaster II-HOM disk, printer & serial comms cards \$295. SASE for long list of included software. Bob Lile, 592 Park St, Nth Carlton 3054 (03) 387 4760

IBM 286 motherboard 12 MHz 512K RAM \$65. 1200/2400 baud phone **modem** \$145. **MFJ**-1270B VHF/HF packet TNC with weather fax etc. \$185. Mark, VK3TCD (03) 309 0909

Icom IC-735 HF txvr, **Alenco** 30A pwr supp \$350. Amp **Dentron** MLA-2500 \$1200, **Daiwa** 4-pos coax switch

\$70, **Icom** SM-10 equaliser mic \$180, monoband 4-el 10M, 3-el 15M, \$100 ea. Byron, VK3BVM (03) 744 5276. Transmitting gear sold to licensed amateurs only.

Kenwood TS-120S HF SSB txvr with VFO-120 ext VFO & workshop manual \$550. Chas, VK3BRZ (052) 82 3167. Licensed amateurs only.

Kenwood TS-830S HF txvr, mint cond one owner as stated, showroom cond. Electronics as orig specs with inst book, service manual, spare 6146s \$1100. Colin, VK3LO (03) 374 1325. Licensed amateurs only.

Kenwood TS-850S HF txvr, 7mths old with inbuilt auto ATU & hand mic. \$2760.

Kenwood PS-51 pwr supp \$410. Jim, VK3NR (03) 367 6920. Lic amateurs only.

Mullard No.7 ATUs (unmodified military specifications, each with quality roller inductor). One unused \$150. One stored in orig vacuum-sealed package since 1959 \$220. Harry, VK3EHS (03) 489 2001 A/H, (03) 344 8516 B/H

Printer 9-dot IBM-compatible, no cable \$60. **Also**

KILL YOUR TVI!

Prepare for the six metre equinox with a **Spectrum Technology** filter. Cut overload of your (neighbor's) TV. Band-stop filter **NF75/6** rejects all 50-54 MHz signals by >40dB. Price \$35 (plus \$2.50 p&p). (Mention this Ad for \$2 discount.) Enquire about other (eg Pager, Braid-Breaker HPF; Low Pass) filters for HF & VHF operation.

Kyle Communications, 668 Lutwyche Rd, Lutwyche, Brisbane QLD 4030 Phone (07) 857 4400

(I'm using one of the six metre filters. It's well made and works very well. Ed.)

Packet modem to suit C-64, AM-7910 HF-VHF H/brew but exc unit, comes with all cables \$50. Damian, VK3EHP (053) 52 4183

Realistic PRO-2005 scanner, mint cond in orig pack, 14 mths old with 400 pages of freqs covering 25-1300 MHz \$500. Andrew, VK3WAB (03) 544 2758

RTTY & CW system includes ZX spectrum computer modems, interface power supplies, tape recorder programs & manuals \$250. VK3AVH (059) 84 3897

Sony ICF-7600 worldband rxvr incl carry case, indoor long wire antenna, stereo headphones, all bands AM, FM, SSB upper/lower. 2 mths old, used twice. As new, mint cond \$320. (03) 844 1282

Terlin mobile HF aerial 10, 15, 20M h/duty spring & chrome base \$150. **Emtron** EAT-300 manual ATU, works very well. \$100. Danny, VK3MGR (053) 34 2818

Tower, 45' tilt-over hot-dip galv, complete with base reinforcement, computations. EC \$350. **Epson** LX-86 printer, new head, EC \$190. Adrian, VK3ATT (03) 7269378

Various: Yaesu FT-680R 6m all-mode \$450. Emotator 103LBx medium rotator \$150. Phillips FM-828 \$100. Barlow Wadley rxvr \$200. Valves, 4CX250B \$30. 9121 \$30. Stainless-steel fold-over sub base for large mobile whip \$40. Transformer 240V to 11-V \$30. MTR-141 high-band suit 2M conv \$25. VK3BQS (051) 47 1991. Transmitting gear sold to licensed amateurs only.

Wanted by Collins collector: KWM-2A. Will pay up to \$1300. Also 32S-3A & 64S3C pay \$1000 ea. Rob, VK3JE (060 37 1262 or (03) 584 5737

Wanted: Coil pi winder suit miniature hi-Q RF coils, require VGC. Peter (03) 543 4333

Wanted: IBM Technical reference manual for IBM PC

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4.77 MHz/8088 machine. Also extender card for PC or PC/XT. John, VK3XAO (03) 736 3445

Wanted: Icom IC-A20 AMAC HT in GC. Ian (053) 82 1102

Wanted: Kenwood TS-680S HF + 6M txvr. Would consider part exchange of virtually brand new TS-690S/AT with all filers — cash balance around \$1000. Great way to upgrade! Steve, VK3OT (055) 72 3333

Wanted: manual (or copy) for Kenwood 6M transverter. All costs paid, also any info or parts or whole not working Dick Smith 6M 100W booster amp. Dennis, VK3TDG (054) 76 2243

Wanted: Photocopy of Yaesu FC-700 ATU schematic also *Silicon Chip* freq meter Nov/Dec 1987 please! All costs returned. M Martin, 8 Taylor Ave, Reservoir 3073 (03) 470 1968

Wanted: ZL-made Tait 80 radio telephone 6 channel, please write — all letters answered. David Stevens, 3 Bartlett Crt, Corio 3214

Yaesu FT-73R 70cm HT with spkr/mic EC \$275. **Icom** IC-O2A 2M HT with spkr/mic & batt chrgr GC \$200. **Yaesu** FT-902D HF txvr VGC \$900. **Minimulti** 3-el tribander with rotator \$300. All prices ono. Martin, VK3YT (03) 742 3397. Transmitting gear sold to licensed amateurs only.

Yaesu FT-102 HF txvr with SP-102 spkr, mike, manual & all boxes. \$800. **Yaesu** FL-2100B linear amp with manual & box \$700. Both in units in GC with box, full output. Ron, VK3ZJ (054) 28 3665. Lic amateurs only.

VK4 AREA

Comm rxvr test eqpt, mainly valve types, SWL estate. Send A4 addressed stamped envelope to Peter Hadgraft, 17 Paxton St, Holland Park 4121 (07) 397 3751

Icom IC-2KL linear amp & IC-AT-500 auto tuner both for

WEATHER FAX PROGRAMS

RADFAX2 is a high-resolution shortwave weather fax receiving, displaying and printing program for the IBM XT or AT computer with a CGA, EGA, VGA or Hercules card. (Please state which.) Programs are \$35 each plus \$3 postage, and are supplied on 5.25" or 3.5" disk (please state which) plus full documentation.

Programs are available only from: M Delahunty, 42 Villiers Street, New Farm, Qld 4005. Phone (07) 358 2785 **SATFAX** vers 5, a weather satellite picture receiving & displaying program for EGA & VGA, is avail for \$45 plus \$3 P&H.

\$2750. Brian, VK4BBS (07) 341 4767. Licensed amateurs only.

Kenwood TR-7200G 2M FM mob, cables, book, bracket VGC. Never used mobile **Tono** 7000 RTTY CW book, cables, circ diag. Bob, VK4FPO (079) 27 1442. Transmitting gear sold to licensed amateurs only.

Kenwood TS-670 txvr HF & 6M with gen cov rxvr with GaAs-FET preamp EC \$800.

Yaesu FRG-9600 scanner, multimode GC \$500. Lloyd, VK4FP (077) 89 2363. Transmitting gear sold to licensed amateurs only.

Numerous **amplifier parts**, high voltage filament & modulation transformers, dummy loads, high voltage capacitors, valve sockets, blowers & more. John, VK4KK (07) 269 6647

Tubes 3CX2500FB, two 4CX1000K, one 4CX250B, crt tubes, one 5PMT58, one 5ADP1, make an offer. Hervey Bay ARC, PO Box 829, Hervey Bay 4655

Very **old radios**, valves, keys, transformers, manuals, books, transmitters, comms rxvrs, dials, special transformers, valvetester, etc. Will pack & dispatch. Max (07) 356 6052

Wanted: Spectrum analyser HP, TEK, Singer etc, 1 GHz or higher GC only. **Also** HP 431 or 432 pwr meter, no head required. VK4AWP (07) 264 1575

Yaesu FT-208R 2M HT, 2 batts, chrgr, spkr/mic \$290 ono. **Yaesu** FT-707 HF txvr with 80M & 15M mob whips VGC. \$700. Paul, VK4KPW

(07) 803 6674. Licensed amateurs only.

VK5 AREA

Drake SSR-1 rxvr 0-30MHz, with manual. \$250. David (08) 333 2782 A/H, (08) 226 6177 B/H

Icom IC-2GAT 2M DTMF FM HT with access \$485 ono.

Commodore SX-64 port, built-in 5" color screen, FDD, packet modem, software. \$555. **VZ300** RTTY modem \$35. **VZ300** dataset, tapes \$35. Incomplete FAX/SSTV modem with software insts for C-64 \$20. **Plessey** MTR-6000 Hi-band 30W 2-ch FM txvr \$45. Ring for more details. Ben, VK5GX (08) 295 5197. Transmitting gear sold to licensed amateurs only.

Icom IC-730 HF txvr, with IC-HM7 & IC-HM10 mics, IC-AH1 auto mobile ATU, mobile whip, books \$1300. **Icom** IC-502 6M SSB port txvr, with mic, book \$150. **Daiwa** CNA-2002 auto ATU, all bands incl WARC, two-pos ant switch, dummyload, book \$500. ono. Harro, VK5HK (08) 382 8990 (voice or fax). Transmitting gear sold to licensed amateurs only.

Icom IC-R7000 comms rxvr with 25M RG-8 & discone ant EC \$1250 ono. David, VK5NAH (08) 278 3861

Wanted: HyGain TH-3JR triband GC, Glyn Berry, VK5NFP, PO Box 263, Kensington Park 5068

Yaesu 2M Gutter-mount stub with 80M & 20M screw-on whips \$150. **Emtron** EAT-300 ATU \$160. VK5BVJ (087) 38 0000

Yaesu monitorscope YC-101 & freq counter YC-601 suit FT-101E both with manuals, mint cond \$250 ea. Steve, VK5KGB (08) 47 3340

VK6 AREA

Realistic HTX-100 10M SSB CW txvr \$300. **Amp** tri-power 250W \$100. Andrew, VK6LLL (098) 71 2058. Licensed amateurs only.

Uher 4000 report monitor, broadcast qual, reel-to-reel port tape recorder with chrgr. EC \$1300 ono. (09) 384 6939

Yaesu FRG-7 rxvr EC \$250 ono. **President** 11M txvr 18-ch all-mode EC. Suit 10M conv \$100. Frank, VK6KID (09) 527 2820

VK7 AREA

JRC JST-135 HF txvr, not used, mint, boxes, manuals, receives 130kHz-30MHz, 150W o/p \$2050. **NVA**-88 matching spkr \$150. **Kenwood** TM-241A new, not used, 2M FM mobile \$550 ono. Matching **DRU-1** dig recording unit to suit \$150. Allen, VK7AN (003) 27 1171. Licensed amateurs only.

Users of **Uniden** HR-2510 10M rigs in Hobart area please contact Ken, VK7JT (002) 47 6683 (*Thanks for your curt note, Ken. However, I'm no mind reader. If you had written your ad clearly in the first place I may have been able to read it. Last month's mistakes happened because your writing was totally indecipherable. Ed.*)

Wanted: 8874 ceramic transmitting triode valve in good or workable cond. Erik, VK7AAB (003) 83 1675

Yaesu FL-2500 amp GC \$800 ono. **MFJ**-986 ATU with roller inductor, as new \$400. Moss, VK7IK (002) 27 8867 Ext.248 B/H. Transmitting gear sold to licensed amateurs only.

VK8 AREA

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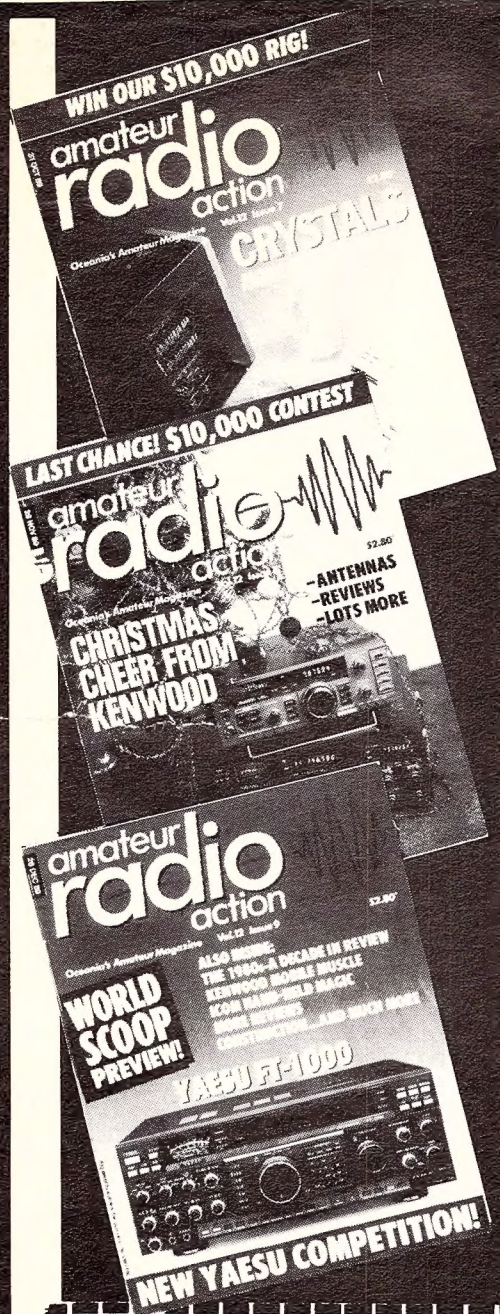
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Readers of **Amateur Radio Action** may use the **FREE CLASSIFIEDS** column to the extent of 25 words absolutely *free*! This offer applies only to *private* 'For Sale' or 'Wanted' classified listings, and to computers, software or computer peripherals with an amateur application. A **limit of one** classified advertisement applies to each advertiser. Any additional words must be paid for or the advertisement **will not be accepted**.

A nominal fee of \$3 per additional 25 words or part thereof will apply. This fee should accompany your material. Photographs may also be included, at a cost of \$5 per insertion, with a limit of one photograph per advertisement. Clear prints are required, and will be reproduced over a one-column width.

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This form is to be used for all classified advertising material in **Amateur Radio Action**. Letters on plain paper requesting the insertion of a free classified advertisement will not be accepted without an original corner flash from an issue not more than three months old. Photocopy or clip this form and post it **with the corner flash** to:

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Next issue's deadline: March 31

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Your signature: _____ Today's date: / /

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MFJ Tuners

All available from stock! No need to wait for the best value tuners around.

HF Tuners - 1.8 — 30MHz

MFJ989C	3kW 'Top of the line'	\$756
MFJ986	3kW Differential 'T'	\$582
MFJ962C	1.5kW	\$499
MFJ949D	300W Deluxe w dummy load	\$325
MFJ948	300W Deluxe, no d/load	\$280
MFJ941E	300W General purpose	\$238
MFJ945D	200W basic mobile	\$195
MFJ16010	200W long wire, no meter	\$86.30
MFJ901B	200W basic, no meter	\$130
MFJ1040B	350W tuner/preselector	\$214
MFJ931	Artificial Ground	\$173

VHF & UHF Tuners

MFJ921	2 mtr 300W tuner/SWR mtr	\$154
MFJ924	70cm 300W tuner/SWR mtr	\$154

MFJ SWR meters

Something for just about every purpose.

MFJ815B	2kW Crossed needle HF	\$151
MFJ817	200W X needle VHF/UHF	\$176
MFJ816	300W conventional HF	\$65
MFJ812B	300W conventional VHF	\$65
MFJ841	5W 2mtr hand-held SWR	\$87.90

Antenna measuring equipment

MFJ207	1.8-30MHz SWR analyser	\$219
MFJ208	2mtr SWR analyser	\$197.89
MFJ204B	1.8-30MHz Antenna bridge	\$173
MFJ206	1.8-30MHz Current probe	\$173
MFJ202B	1-100MHz Noise bridge	\$162

Dummy Loads

MFJ250X	2kW PEP Can type (no oil)	\$62
MFJ260B	300W 150MHz Air cooled	\$62
MFJ262	1kW 30MHz Air cooled	\$139.90
MFJ264	1.5kW 650MHz Air cooled	\$129.90
RA38	Resistor for MFJ260B	\$29.70
RA39	Resistor for MFJ264	\$86.40

MFJ Coax Switches

Quality and price that's hard to beat!

MFJ1702B	2 pos 1kW SO-239 conns	\$43.90
MFJ1702BN	2 pos N conns to 1.1GHz	\$63.90
MFJ1704	4 pos 1kW SO-239 conns	\$119
MFJ1704N	4 pos N conns	\$140
MFJ1701	6 pos 2kW PEP HF only	\$69.90
MFJ1700B	2 x 6 pos 2kW PEP HF	\$129.90
RCS-4	4 pos remote mount HF	\$354
RCS-8V	5 pos remote mnt 250MHz	\$409.20

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MFJ Bits & Pieces

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MFJ283	Alinco - std size	\$54.00
MFJ284	Icom/Yaesu - std size	\$54.00
MFJ286	Kenwood - std size	\$54.00
MFJ285	Icom/Yaesu/Alinco - mini	\$54.00
MFJ285L	as above with 90° connector	\$54.00
MFJ287	Kenwood - mini size	\$54.00
MFJ287L	as above with 90° connector	\$54.00

Hand-held antennas

MFJ1710	3/8λ 2 metre extendible	\$21.90
MFJ1712	Dual band extendible	\$31.99
MFJ1714	1/2λ 2 metre extendible	\$36.27

Hand held holders

MFJ24	Plastic, suits car door	\$23.90
MFJ25	Plastic desk top type	\$23.90

Clocks

MFJ107B	Single 24hr LCD clock	\$21.29
MFJ108B	Dual 12/24hr LCD clock	\$42.70
MFJ110	LCD World time zone clock	\$53.90

DC Distribution boards

MFJ1112	Six prs binding posts, basic	\$43.00
MFJ1116	Eight prs, deluxe (sw&mtr)	\$96.96

Antenna extras

MFJ704	HF Low pass filter	\$79.90
MFJ912	Outdoor HF balun box	\$79.90

Remember, only Stewart Electronics can offer you MFJ factory warranty and support!

Software

MFJ1281	EasyDX Log+Terminal(PC)	\$62.95
MFJ1281M	3.5" disc version	\$62.95
MFJ1282B	Multicom for C64/128	\$79.95
MFJ1283	Tape package for VIC20	\$49.95
MFJ1284	MFJCOM (basic) for PC	\$49.95
MFJ1284M	3.5" disc version	\$49.95
MFJ1287	Starter pack MACINTOSH	\$49.95
MFJ1289	MUTICOM for PC	\$78.50
MFJ1289M	3.5" disc version	\$78.50

Cables

To connect to MFJ TNC's

MFJ5022	Alinco HT (not DJ100)	\$29.95
MFJ5024	ICOM & Yaesu HT	\$29.95
MFJ5026	Kenwood HT (not 2500)	\$29.95
MFJ5080	Yaesu 8 pin	\$29.95
MFJ5084	ICOM 8 pin	\$29.95
MFJ5086	Kenwood/Alinco 8 pin	\$29.95

Multi-mode controllers

MFJ1278	9 modes HF/VHF	\$539
MFJ1278T	1278 with 2400bps packet	\$705
MFJ1278X	1278 with 9600bps packet	\$734

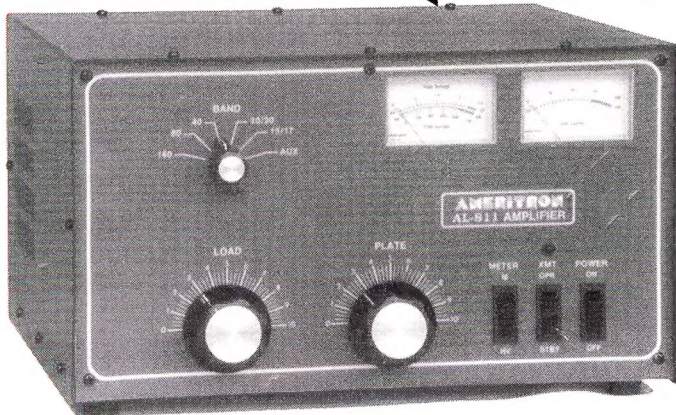
Packet only controllers

MFJ1270B	300-1200bps VHF only	\$269
MFJ1270BT	300-2400bps VHF only	\$366
MFJ1274	HF/VHF w tuning indicator	\$299
MFJ1274T	1274 with 2400bps	\$399

Modems & accesories

MFJ2400	2400bps add-in modem	\$170
MFJ2400X	2400bps modem for PK-232	\$170
MFJ9600	9600bps add-in modem	\$199
MFJ1272B	MIC/TNC switch for MFJ	\$76.80
MFJ1272BX	MIC/TNC switch for AEA	\$76.80
MFJ1315X	12VDC plug-pack for TNC's	\$18.50

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